Savory

Holistic Management Case Studies, Profiles and Articles

For many years, large areas of grasslands around the world have been turning into barren deserts. This process, called desertification, is happening at an alarming rate and plays a critical role in many of the world's most pressing problems, including climate change, drought, famine, poverty and social violence.

One major cause of desertification is agriculture – or the production of food and fiber from the world's land by human beings for human beings. In the past, large wild herds of grass-eating herbivores migrated and were pushed along by predators over the grasslands. These herds grazed, defecated, stomped and salivated as they moved around, building soil and deepening plant roots. Over time, the wild herds were largely replaced by small numbers of domestic, sedentary livestock and populations of predators were mostly destroyed. Without the constant activity of large numbers of cattle, the cycle of biological decay on the grasslands was interrupted and the once-rich soils turned into dry, exposed desert land.

Over forty years ago, Allan Savory developed Holistic Management, an approach that helps land managers, farmers, ranchers, environmentalists, policymakers and others understand the relationship between large herds of wild herbivores and the grasslands and develop strategies for managing herds of domestic livestock to mimic those wild herds to heal the grasslands. Holistic Management is successful because it is a cost-effective, highly scalable, and a nature-based solution. It is sustainable because it increases land productivity, livestock stocking rates, and profits.

Today, there are successful Holistic Management practitioners spread across the globe, from Canada to Patagonia and from Zimbabwe to Australia to Montana. More than 10,000 people have been trained in Holistic Management and its associated land and grazing planning procedures and over 40 million acres are managed holistically worldwide.

The following is a resource portfolio of a selection of case studies, profiles, and popular articles. While many more exist, these were chosen because they represent those practicing Holistic Management who have significant data behind the results of their work.

Over the coming years the Savory Institute will be embarking on an endeavor to build upon this portfolio by creating a selection of in depth case studies rich in empirical data documenting the success of Holistic Managers throughout the world.

Holistic Management's Research and Knowledge Management Initiative

The Savory Institute empowers people to properly manage livestock by teaching them how to use Holistic Management, connecting them in ways that have benefits for everyone, and removing barriers along the path to success.

Many of our key audiences such as policymakers, landowners and investors want evidence that shows Holistic Management works to achieve large-scale environmental, economic, and social benefits.

To meet this need, the Savory Institute is working to measure impact by monitoring the health of ecosystem processes, sequestration of atmospheric carbon into soil carbon, wellbeing of our communities, as well as our financial vitality. In addition to this monitoring and research and this collection of case studies, profiles, and articles, the Savory Institute has currated a portfolio that proves the principles behind Holistic Management includes peer-reviewed journal articles, theses and dissertations, reports, and presentations. The gaps in research, documentation, and monitoring will guide us in strategically identifying collaborations and projects in which to engage.

For more information about Holistic Management or this initiative, please visit savory.global and contact Andrea Malmberg, at amalmberg@savory.global.

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Ncube, E. (2016) Livestock Rejuvenates Ecosystem. PELUM Zimbabwe – Networking for a Greener Africa.

Smallholder farmers in many parts of Africa face numerous challenges such as desertification, drying rivers and wells, poverty, increasing spread of infectious diseases, crop failures and dwindling livestock. Women who constitute the majority of smallholder farmers suffer the most. Although the challenges they face seem insurmountable, pioneering work in Holistic Land and Livestock Management (HLLM) is offering hope.

McMahon, P. (2016) The Investment Case for Ecological Farming. SLM Partners.

Farmland has emerged as a new asset class in recent years for investors seeking the security of real assets. Financial returns have been good. However, the landscape is changing because of lower commodity prices and greater awareness of the environmental costs of many agricultural practices. Drawing on the latest science and market data, this paper analyses the hidden risks of industrial agriculture. These risks include volatile input costs, degrading natural assets, vulnerability to a changing climate, negative environmental impacts, and shifting consumer trends. The paper shows how ecological farming offers a genuine alternative. Ecological farming seeks to build soil health, minimise external inputs, recycle nutrients and energy, embrace diversity of crops and animals, and produce high value food and commodities. Ecological farming can produce higher or similar yields, while making the most of what nature provides for free. It can enhance the soils, water and ecosystems on which agriculture depends, while increasing resilience to extreme weather. It can produce positive environmental impacts, not least by taking carbon from the atmosphere and putting it in the soil. Ecological farmers can also tap into valuable, growing markets.

SLM (2016) The Investment Case for Holistic Planned Grazing.

Holistic planned grazing is an alternative grazing management and decision-making process. It involves dividing land into smaller paddocks, putting livestock in large herds, and moving them frequently. It provides a decision-making framework that allows managers to vary the size of herds and the frequency of herd movements according to seasonal conditions. The land benefits from concentrated animal impact, and then long periods of rest, which mimics the behaviour of grazing animals in natural grassland ecosystems.

The environmental benefits of holistic planned grazing have been well-documented by ecologists and biologists. Data on the economic benefits is harder to find, as it is often

not a focus of scientific research projects. However, there are enough case studies from around the world to demonstrate the clear economic advantages of this form of grazing management. Our research indicates that switching to holistic planned grazing can:

- double the carrying capacity of the land (i.e. support twice as many animals);
- halve the costs of production (fewer input costs, plus more animals in relation to fixed costs);
- produce high-quality products (meat, wool) that can attract a sustainability premium in the market (organic, grass-fed, etc);
- enhance the capital value of the land over time;
- create positive environmental impacts (soil carbon, water cycles, biodiversity) that may be monetisable as part of new environmental markets and payment schemes.

Savory Institute (2013) Estancia Punta Delgada Case Study - San Gregorio, Chile. 1:1-9.

Estancia Punta Delgada, was managed traditionally from 1883-2011. Land was divided into winter and summer paddocks and animals stayed in every paddock continuously, depending on the seasons: Twenty-two winter and lambing paddocks in continuous grazing from the first of May to late January; Eight summer grassland paddocks where sheep are distributed in every paddock for three months. In just a year the managers of Estancia Punta Delgada achieved: An efficient work system; fewer, but more qualified people; a significant response in every paddock but more in those that experienced intense grazing; improvement in ewes' body score index; and twice the carrying capacity. The managers of Estancia Punta Delgada have seen positive change in every biological indicator for grasslands. They are seeing evidence of regeneration everywhere while improving carrying capacity and body condition score of the ewes. Hogget production has increased 30% and they are maintaining or improving upon production traits.

Savory Institute (2013) Estancia Nevada Case Study - San Gregorio, Chile. 1:1-9.

The Estancia Nevada is owned and managed by the Twyman family. The Twymans started managing their property in Chilean Patagonia using Holistic Management principles in 2009. Estancia Nevada is a 2500-hectare property near San Gregorio, Chile. Before Holistic Management the ranch had 20 paddocks and today there are 60 paddocks that are fenced conventionally as well as with moveable electric fence. Since practicing Holistic Management they are seeing improvements, particularly in plant density, in all pastures in a very short time. The most progress is seen where the animal density was higher and the time of grazing was shorter. Erosion that was once evident on slopes and dry lagoons is now mostly covered. There are more perennials and they are seeing a "healthier green."

Savory Institute (2013) 777 Buffalo Ranch - South Dakota. 1:1-9.

In 2003, Mimi took over ownership and full time management of the 777 Buffalo Ranch. The 777 Buffalo Ranch's decision makers manage roughly 28,000 acres and 1700 head of bison through 25 paddocks for meat and live animal sales. This area typically gets around 16 inches of precipitation with the majority of this coming in the spring. Using Holistic Management, Mimi has reclaimed the land over the years, bringing back the native vegetation, insects and wildlife that co-existed with the buffalo in days gone by mimicking the predator and prey relationship that once existed. The health and resilience of the 777 Buffalo Ranch is directly related to the abundance and diversity of its plant, insect, bird, microorganisms, and animal species. On the ranch, plant diversity is increasing having many species of native cool and warm season grasses, flowering forbs, shrubs, and trees while bare ground and the amount of space between plants have declined significantly.

Savory Institute (2013) Fox Ranch - Colorado. 1:1-4.

The Nature Conservancy (TNC) purchased the Fox Ranch, in Northeastern Colorado in 1998. TNC works with a local rancher to manage the land for both conservation and agricultural values. To advance their conservation goals while increasing production and improving animal performance and profitability, TNC partnered with the Savory Institute (SI) in 2011 to implement Holistic Management™. The decision makers include representatives from TNC, SI, and a local ranching family that leases and manages the 14,700 acres for cattle production. The entire team now makes decisions toward their holistic context,™ has implemented holistic planned grazing and financial planning, and has begun putting into place improvements based on their holistic land plan. In the first year stocking rate increased by 95%, there was an increase of 40% in daily gains, according to the rancher 2012 was the firs profitable year since leasing the ranch. In terms of production remote sensing potentially indicated stable production (or available green biomass) on the Fox Ranch when the 2012 drought intensified compared to neighboring properties whose production appeared to decline. This could be due to keeping grass in a vegetative state and planning for adequate recovery plant periods.

Savory Institute (2012) BR and Horse Creek Ranches Case Study – South Dakota. 1:1-3.

In April 2010, the first Grasslands managed ranches were acquired near Newell, South Dakota. These 14,000 acres are custom grazed meaning that the managers are providing pasture and management for others rather than owning the cattle outright. In order to realize the properties full potential the BR and Horse Creek stewards apply practical

skills, deep knowledge, and extensive experience in Holistic Management™ to these underappreciated assets that have fantastic ecological potential and therefore significant financial promise. On these ranches in 2011 they carried approximately 3600 yearlings and 430 pairs resulting in more than doubling their stocking rate over 2010 (increasing from 14.5 Stock Days per Acre (SDA) harvest to 34 SDA). This is unprecedented in this locality and animal performance still met historical averages. In addition, they increased net operating income from $36,000 to $144,000, ending with a 5.6% return on investment. In addition to soil carbon monitoring, the ranches have engaged a third party to monitor changes in ecological function by documenting indicators at the soil surface. By incorporating indicators related to the four ecosystem processes of energy flow, mineral cycle, water cycle, and community dynamics managers are able to make sound management decisions and be responsive in a timely manner. On both of these ranches low species diversity of grasses is the major concern. Yet with only a few years of changed management BR and Horse Creek managers have documented that they are on an improving trend and have observed several new grass species such as sideoats grama in greater abundance as well as greater diversity of forbs. During the dry spring of 2012 it was observed that the new growth in neighboring pastures was not as vigorous or as verdant as the holistically managed land. Furthermore, perennial plant density is higher on the BR and Horse Creek ranches as well. This shows that the past two years of Holistic Management on the properties has benefited ecological integrity.

Savory Institute (2012) Cinch Buckle Ranch Case Study – Montana. 1:1-2

In 2011, Grasslands added the 39,000-acre Cinch Buckle Ranch, near Broadus, Montana to their portfolio of ranches under management. Ron Goddard and family, long-time ranch managers practicing Holistic Management spearheaded the Cinch Buckle on-the-ground operations. The Cinch Buckle contains close to 30,000 acres of public land, with about 12,000 of that owned by the Bureau of Land Management (BLM) and the balance being Montana State Lands. Most of the BLM ground is contiguous on the east side of the ranch, and is subject to an allotment management plan. Grasslands' managers have successfully rewritten this plan in conjunction with the BLM to give them much greater flexibility to meet financial expectations as well as address ecological concerns such as enhancing Sage Grouse habitat. The people behind the Cinch Buckle Ranch invest a significant amount of time building the relationships with agency personnel and environmental groups in order to demonstrate what they are accomplishing on the land. This effort is of course in hope that they will gain even greater flexibility regarding stocking rates in the future – an increase of which is the key to realizing a higher return financially as well as ecologically. However, it is also because they want to be an example of resiliency and hope that their practices will pass on to other public land ranches, making the whole region more resilient.

Savory Institute (2012) Africa Centre for Holistic Management Zimbabwean Savanna Case Study. 1:1-9.

ACHM is a local not-for-profit organization established by Zimbabweans to restore their way of life and the resources upon which they depend. Located 22 km from Victoria Falls and working with neighbors in Hwange Communal Lands, The Zimbabwe Forestry Commission and Zimbabwe National Parks and Wildlife Management, the Dimbangombe Learning Site and communities of Hwange are demonstrating that the land, water, and biological resource base can be healed through properly managed livestock. ACHM's head office is situated on Dimbangombe Ranch a 3000ha property. The property is separated from the Hwange Community by a patch of state forestland and a main road that runs along the community's western edge to Victoria Falls. Dimbangombe is one of many properties that make up a single contiguous wildlife range stretching from the Hwange National Park in southwest Zimbabwe to Zambezi National Park in the north, and into the surrounding wildlife reserves of Namibia, Botswana, Zambia and Angola and is part of the Kavango-Zambezi Transfrontier Conservation Area. This area is known for its big game – lion, leopard, cheetah, elephant, buffalo, roan and sable antelope, and a rich array of birds.

Bafan, B. (January 10, 2012) Brown Revolution Brings New Hope. IPS – Inter Press Service.

In a January 10 article titled "Brown Revolution Brings New Hope" IPS News reported how the Savory Institute and its partner organization, the Africa Centre for Holistic Management (ACHM), successfully used holistic management practices to reverse the effects of desertification on areas of their 2,900-hectare ranch in the Dimbangombe area of Zimbabwe – areas that had seen a 400 percent increase in livestock.

Schwartz, J. (October 24, 2011) Saving U.S. Grasslands: A Bid to Turn Back the Clock on Desertification. The Christian Science Monitor.

Desertification caused by climate change and human activity now threatens the livelihoods of more than 1 billion people worldwide, according to the United Nations. Globally, 52 percent of land used to grow food has been affected either moderately or severely. As grasslands diminish on prairies and savannas around the world, an innovative ranching technique that reverses the environmental damage of desertification makes its way to the US."

Hamilton, L. (September 29, 2011) The Brown Revolution – Increasing Agricultural Productivity Naturally. The Atlantic. 1-20.

A team of ranchers in South Dakota are using holistic management techniques to regenerate our ailing grasslands and fight climate change.

Schwartz, J.D. (September 07, 2010) How to Save the Grasslands: Bring in More Cattle. Time. 1-4.

Many ranchers, conservationists, and investors are determined to revive the magical and once highly productive grassland landscapes. They have embarked on doing so by increasing the density of livestock and practicing Holistic Management.

Schwartz, J.D. (September 14, 2010) Roving Herds of Grazing Climate Helpers. Miller-McCune: Environment. 1-3.

A smarter way of raising herd animals, known as holistic management, may be a catalyst to helping the soil reclaim its role as a global carbon sponge.

Darius, D. (June 7, 2010) Using Primeval Methods to Fight Modern Abuses of Agricultural Lands. New York Times. 1-3.

Allan Savory's project, titled "Operation Hope," has won the 2010 Buckminster Fuller Award and is an ongoing effort to reverse the desertification that is spreading across the world's savannas and grasslands like a disease. It is rapidly changing farmland into deserts. What makes the effort unusual for Savory, a biologist, is his use of what he called "the most universally condemned tool in the world" – livestock.

Kuang, C. (June 2, 2010) Method That Turns Wastelands Green Wins 2010 Buckminster fuller Challenge. Fast Company. 1-4.

Livestock might not be just the cause of desertification--they might also be the solution.

Volkmann, W. (2010) Going Beyond Best Practice in the Kalahari Bushveld Savannah: A Case study of Brahman Botswana on farm Oasis. Earth Wise Enterprise, Namibia. 1-17.

Most deserts have oasis where humans and animals find nourishment for their physical needs. These special places demonstrate nature's unexpected abundance and the creative ability of humans to produce sustenance in harsh conditions. Given this tradition of naming places in deserts the early settlers of the Kalahari SEMI-desert may be forgiven for choosing the name Oasis for a farm 25 km South of Ghanzi near the Western border of Botswana with Namibia. The extension of the Kalahari towards the North is more bushveld savannah than desert and when one travels across the 18 832 hectare farm the diversity and abundant growth of grass, shrubs and trees and the absence of a "special water hole" asks for a nontraditional association with the term oasis. The long-term average rainfall here is 420 mm but over the last 8 years there were differences between 210 and 696 mm.

Rather than creating magic around an insular water point, the owners and managers of Oasis have engaged the whole landscape to achieve rangeland and livestock production and personal satisfaction. Many times one hears people say "If you still need convincing that management is THE critical factor in the productivity of rangelands observe the expansion of brachiaria negropedata (swartvootjie gras) in the Kalahari sand at Oasis."

Stocking approximately 80 kg of live animal mass per hectare in the Kalahari bushveld savannah is regarded crazy by most – unless you have seen the veld and the herd of healthy, beautiful Beef Master cattle at Oasis. In 1998 they ran a maximum of 1900 head of animals on the 18,800 hectares. By 2003 it was 3200 and in 2010 the number has risen to 4170. Between 2003 and 2009 the profit per marketing unit went from 100 – 350, the profit per hectare went from 15-45, and the increase in net worth quadrupled. All of this success has been achieved while simultaneously enhancing ecological health.

Gadzia, Kirk (2010) Resilience on the Prairie Edge: The 777 Buffalo Ranch. The Quivira Coalition Journal. (35) 17-21.

In 1972 Ray Hillenbrand and his wife Rita bought the 777 ranch, a prairie property located between the Badlands and the Black Hills of South Dakota. Mimi Hillenbrand, daughter of Ray and Rita, has been involved in the land and bison management as well as marketing aspects of the business from an early age. In 1991 she took her first training in Holistic Management, or HRM as it was known at the time, and has continued her training, and frequently travels to grasslands worldwide in her studies of wildlife and wild places. Mimi is passionate about these animals and their place on this land. In fact, the health of the land is a driving force for her management objectives and permeates all aspects of the business. Under Holistic Management, low production grasses are being replaced by deep-rooted native species like Green Needlegrass. Native herbs such as Echinacea, prized for its medicinal qualities, also grow in profusion.

Each year Mimi helps create a detailed grazing plan for the bison herd that moves between 25 different pastures during the growing and dormant season. In 1992, in

conjunction with planned grazing, ecosystem monitoring transects were established across the ranch and data are collected annually. The data analysis shows a decrease in bare ground and erosion with concurrent increases in species complexity and diversity. The land is improving – becoming more resilient to climate extremes that are "normal" for this landscape where the edge of the prairie meets the black hills. In 2003, Mimi took over ownership and full time management of the 777 Buffalo Ranch. Mimi spent increased amounts of time in the field observing animal behavior and planning, but her most challenging task was to make the business profitable. She began selling more of the marketable animals and aligning forage production to stocking rate. This increased income and began the process of getting the ranch out of debt. Currently, the ranch grazes about 1,700 head of bison over roughly 28,000 acres and markets both meat and live animals.

The health and resilience of the 777 Buffalo Ranch is directly related to the abundance and diversity of its plant and animal species. On the ranch, plant diversity is increasing having many species of native cool and warm season grasses, flowering forbs, shrubs and trees. Deer, elk, antelope, mountain lions, coyotes, bobcats, foxes, badgers, prairie dogs, porcupines, ground squirrels and many other animals share the range with the bison as they have for thousands of years. The ranch is also home to a variety of birds and raptors such as golden and bald eagles, red tail hawks, ferruginous hawks, prairie falcons and many others. Rare grassland birds such as the Baird's sparrow and Long-billed curlew are found in abundance. Another good measure of the balance now being sustained on the ranch is the increased effectiveness of the water cycle. There are virtually no signs of erosion present, except in the badland areas where soil type prevents plant growth. With nearly all the moisture that falls captured in the soil, the ranch is becoming more resistant to the effects of drought. During the last five years of below average rainfall, the ranch did not have to destock.

Isele, J., E Külbs with W. Volkmann (2010) The Efficiency of Low Input: A Case Study. Earth Wise Enterprise, Namibia. 1-10.

Situated at the Western border of the typical Kalahari dune landscape but in almost completely flat countryside, Farm Springbockvley is located 180 km southeast of Windhoek. On its 9.500 hectare of predominantly red sand and partially limestone soils, Springbockvley contains open grassland with some shrubs and trees. Only few shallow depressions exist, of which the most prominent one is the name giver to the farm: more than 100 years ago, when the farm was marked out and the house built, many springbuck are said to have lingered around this valley from although more in the that is fed by a spring and therefore holds semi-permanent open water. The long-term average rainfall at Springbockvley is 260 mm, with figures differing between 70mm and 460 mm in the last five years.

Ekkehard Külbs took over the farming business from his parents in 1989 and since 2004 runs it together with his wife Judith Isele. Ekkehards father, who bought the farm in 1959,

developed it with simplicity and efficiency in mind and managed soil, rangeland and animals conservatively, but with much passion for the whole ecosystem. For better utilization and to establish grazing management, he built up the main part of today's infrastructure on the farm: 60 camps and – as is common in this area of the country – jackal proof fencing along the borders of the farm. After having studied agriculture in Germany, Ekkehard not only continued with the farming approach of his father, but also refined it in his years of farming. He started off with attending a course in Holistic Management in 1990. Later, with her background of having studied Organic Agriculture, it was easy for Judith to keep up with Ekkehards holistic approach when she moved from Germany to Namibia to join him on the farm.

On Springbockvley, 4 permanent staff members assist with the tasks. Each of them carries responsibility for one of the four "flerds" – a flock of sheep and a herd of cattle combined. In 1990 Ekkehard started to implement the principles of Holistic Management and many of the financial and grazing planning procedures. He combined herds and started to move them according to a time plan that included the differences in size and quality of each camp. The nutritional needs of the animals at different times of the year were accommodated into the planning to optimize condition and production. Now there are three big cells of 16 to 17 camps each, which contain up to 2000 sheep and 300 cattle. In the fourth cell 11 camps around the farmyard are at the disposal of a smaller flerd with around 500 sheep and 100 cattle.

Apart from cattle and sheep, approximately 350 springbuck, 100 oryx and varying numbers of kudu and warthog are utilizing what grows on Springbockvley. They are being used for own consumption of venison, or by professional hunters when needed to control numbers. Still, oryx and springbuck have increased substantially in the last 10 to 12 years, after being freed from restriction to only a few "game camps" Ekkehards father had limited them to. They now can roam freely and are easily changing through the gates that are open whenever camps are not occupied by sheep and cattle. Oryx sometimes allow even to be moved between camps, sometimes done to install rest before or after planned grazing by the flerds. In addition there are duiker, steenbok, aardwolf, bat-eared fox and other small animals as well as predators like African wild cat, cape fox, and the, for sheep farming ever controversial, caracal and black-backed jackal. The movements of latter are closely monitored and whenever moving between the sheep, will be trapped and killed. Still the lamb losses to black-backed jackal and other small predators are accepted to be approximately 5 % annually. Although Ekkehard and Judith would prefer co-existing with jackals, they carry on with the current practice, for the time being, to keep losses down.

When Ekkehard in 1989 took over the livestock from his parents they ran 250 Simmentaler cattle and 3000 Karakul sheep. By 2010 the number has risen to about 700 Nguni cattle and 5000 Damara sheep. Farming with these two indigenous breeds – Ngunis and Damaras – achieves remarkable production per hectare at Springbockvley. The annual meat production since 2000 is on average 11 kg / hectare with a maximum of

14.8 kg per hectare in 2003. The meat production constitutes more than one third of the stocking rate since 1995, which compares well even with areas of higher production capacities.

Gill, C. (2009) Doing What Works. Range Magazine. Fall 48-49.

Article on Holistic Management by US ranch-owner who has used approach on his property. Explains why some scientists mistakenly rejected approach. Circle Ranch is a 10,000-hectare property in West Texas, USA. The owner Chris Gill introduced holistic management techniques under guidance from Allan Savory. Results achieved include:

- Livestock numbers have increased by 400%;
- Amount of forage taken has tripled; and
- Substantial increase in profitability.

Newport, A. (2009) N.D. Rancher Builds Biological Capital. Beef Producer. January BP7.

Over the past 40 years, Gene Goven has proven the real financial value of biological capital on his ranch in Turtle Lake, N.D.. Since Goven changed his entire management style in 1982, his soils and forage have improved so much he has increased stocking rate by 345% and his daily gain on heifers and steers combined by just over one-half pound per day from birth to 205-day adjusted weaning weight.

Goven and the scientists he works with also have demonstrated tremendous improvement in his soils' ability to take up water. Before 1982, the average infiltration rate was 0.8 inch per hour.

About eight years ago, it was scientifically quantified at 6.2 inches per hour. Goven's own data now shows some areas are up to 10 inches per hour. In the old days, Goven's thin hilltop soils once produced only 400 to 500 total pounds of forage per acre per year. Goven says he now leaves a minimum of 1,000 pounds of forage behind after the final grazing. This is significant in that 100 pounds of dried soil with 1.5% to 2% organic matter will hold 35 to 40 pounds of water, and 100 pounds of dried soil with 4% to 5% organic matter can hold 165 to 190 pounds of water.

Walsh, D. (2009) The Holistic Management Approach Etiwanda Station, NSW. The Central Australian Grazing Strategies Project Working Paper Series. Desert Knowledge CRC, DKCRC Working Paper 57 Alice Springs. 1-11.

Summary: Etiwanda Station is a 28,000-hectare property used to produce sheep, cattle and goats. The owners adopted the Holistic Management approximately 10 years ago. The following results have been observed:

- Easier animal handling because only 2 mobs (instead of 10 previously) and movement is planned to ensure animals are close to handling facilities at right time;
- Now in top 10% of producers in terms of profitability, compared to average or below average before changing management;
- Improvement in quality and quantity of pastures with an increase in palatable perennial grasses; and
- Set aside of paddocks gives 3-month buffer of feed during periods of drought.

Howell, J. (2008) The Whitten Ranch – Creating More with Less. For the Love of Land. Chapter 19. 209-223.

The Whitten ranch lies at an elevation of 7000 to 8000 feet (2130 to 2440 meters), surrounded by two of the West's most dramatic mountain ranges (the San Juan and Sangre de Cristo ranges), and comprising the headwaters of the vast Rio Grande watershed. The San Luis Valley is a microcosm of everything that's "complicated" about water. At the soil surface, a whopping 7" (180 mm) of precipitation settles in an average year. Under natural conditions, most of the valley is a high altitude, very cold semi-desert with about a 90-day growing season. Beneath the soil surface, a shallow, vast underground aquifer, made possible by a unique geology and underground flows from the surrounding mountain ranges, supports a state-of-the-art agricultural industry based on center pivot sprinkler irrigation and high dollar (and high input) potato farming. Surface flows from creeks that cascade out of the mountains, and from canals diverted out of the Rio Grande itself, are the backbone of the valley's haying and cattle/sheep ranching industry. Through the practice of Holistic Management he Whitten Ranch has become resilient in this tough environment by questioning traditional practices in order to sustain traditional lifestyles.

Howell, J. (2008) Twodot Land and Livestock – Pushing Limits on the Northern Plains. For the Love of Land. Chapter 23. 248-260.

Fourth generation Montanan rancher and second generation Holistic Management practitioner continues to push the envelope while simultaneous increasing profits, cultural well being, and ecological resiliency. For instance while still doing holistic grazing planning, in 2006, Zach pastured a fairly conventional four herds—three groups of yearlings (750 head, 440 head, and 500 head), plus a herd of 400 cows. This was a big improvement over the old days, especially since total pasture numbers had now increased to 70% (as a result of adding new pastures, and incorporating previously hayed pastures into the grazing plan) and the herds were larger, greatly increasing stock density and all its associated benefits. In 2007 Jones invested in water in water development in order to combine all the yearlings into one big herd of 1,550 head. This herd was on Zachary's 12,000 acres all summer (mid-May to mid-September), as well as a year round herd of 500 cows.

Zachary and Shannon Jones are young leaders in the world of holistically sound land management and beef production. Their keen intellects, combined with tested practical grit, form a rare combination. Their low cost/high gross profit model has the Jones Family poised to capitalize on the world's growing hunger for high quality, nutrient-dense, ecologically regenerative protein.

Howell, J. (2008) Rancho de la Inmaculada – Prospering in the Desert. For the Love of Land. Chapter 29. 311-323.

At 2500 feet (820 meters) of elevation, the patch of desert embracing La Inmaculada is blessed with an average of 13 inches (330 mm) of annual precipitation. Since the Aguirres have been practicing Holistic Management, annual totals have ranged from 6 to 25 inches. About 50 percent comes during the summer monsoons in July and August, their main growing season. Because there is an almost total absence of cool-season grasses, winter rains do them little good in terms of grass growth, but they do add to the bank of soil moisture critical to brush green-up in the spring. Even though every brush and cactus plant had been bulldozed in the '70s, much of it has fortunately returned. Today it's regarded as a fantastic resource rather than a worthless pest. The main brush species include two types of paloverde, ironwood, and mesquite, all of which are legumes. With the exception of extreme drought years, they all flower and leaf out in spring, several months ahead of the summer monsoon season, providing valuable forage during the time of year that the grass is at its worst. In addition, the return of all the perennial grasses, and the spread of the buffel grass, has primarily resulted from careful holistic grazing planning.

Howell, J. (2008) Prosperity through Simplicity – The Coughlans of Tarabah. For the Love of Land. Chapter 37. 394-400.

With only a 17-inch (425-mm), winter-dominant rainfall pattern, the grazing on Tarabah is planned through a six-month, southern hemisphere winter-spring growing season from early May through October, and the dormant season includes the rest of the year from November through April. During the growing season, 90-day recovery periods are planned (resulting in most pastures receiving two grazings), and two herds are managed—mature cows and mixed sex yearlings. This results in average grazing periods of only two days. During the six-month dormant season, all the animals are put into one herd and moved through all 97 pastures, taking only one selection over the dry season.

Calving now happens in June and July (instead of the area's traditional fall calving season in March and April), the middle of winter. But in their mild Mediterranean environment, winter isn't really winter. It's the beginning of the green season, with calves hitting the ground as grass growth gets under way. By the time the bulls go out on August 20, the cows have had at least two months of abundant green grass, and, despite the demands of lactation, are in prime shape to conceive.

In 2001, the Coughlans were receiving approximately US$.50/lb ($1.10/kg) for their yearlings, and that was an all-time record high. With an unbelievably low cost of production of US$.10/lb ($.22/kg), they were understandably pretty comfortable and content with their profit margins. Five years later, cost of production is still the same, but price has risen to US$.80/lb ($1.76/kg) for a finished yearling (as a result of a continued market upswing combined with their organic premium).

Because of the winter and spring concentration of precipitation, dryland wheat farming, and over a century of continuous grazing, vast tracts of land in southwestern New South Wales have lost their perennials and reverted to grasslands dominated by cool season annuals. The Coughlans take photopoints every six months, and read transects every two to three years, and with this data (combined with everyday observation) are seeing some amazing things happen. For example, Kangaroo grass, a native warm season perennial of the genus Themeda, is making a comeback on parts Tarabah. It's nearly non-existent for miles in any other direction. The Coughlans have created the niche, and long-dormant Themeda seed has responded.

When they began managing holistically in 1997, they set the ambitious goal of achieving 100 percent ground cover; and, in Michael's words, "We are there." The duck-billed platypus in the creeks are increasing in abundance every year, and echidnas (little porcupine-looking critters) are making a comeback. During his entire childhood on Tarabah, Michael never saw an echidna, and last year he saw ten.

Howell, J. (2008) Resiliency Down Under Drought-Proofing in New South Wales. For the Love of Land. Chapter 37. 401-407.

As the world's most drought-prone country, Australia can be a tough place to make a living from grass. The recent drought across winter-rainfall dominant, southern Australia has been so pronounced that most of the world has been aware of the dire situation.

Conventional cattle and sheep farmers across New South Wales and Victoria have routinely spent on the order of $250/cow and $55/sheep on purchased feed to pull through the drought and many sold out. The Coughlan family focuses on functional cattle, healthy ecosystem processes, and diligent grazing planning, which gave them a huge advantage in surviving this tough situation. Not only did they survive but they

thrived. After having received reasonable moisture since April, they actually had more cattle than when the drought started, and they didn't buy in a pound of forage.

Howell, J. (2008) On Zimbabwe's High Veld – The Johann Zietsman Story. For the Love of Land. Chapter 39. 411-426.

Nestled on 2,000 acres in the rolling, brittle bushveld (veld means rangeland in the Afrikaans language) of central Zimbabwe lives the Johann Zietsman family. After only one year of practicing Holistic Management and monitoring the biological and soil surface condition changes on his land, Johann has been able to record some dramatic results. Mature capping has decreased from 43.2% to 1.2%, litter has increased from 28-46.4%, and bare ground decreased from 52% to 38%. Rank, over-rested grass plants decreased from 42 to 0%, and plant spacing from 4.6 cm to 2.8 cm. Unpalatable, narrow-leafed grass species have decreased from 86 to 46%, and palatable, broad-leafed, climax species have increased from 11.5 to 52%. Two weeks after the onset of the rainy season, the broad-leafed plants that had established the previous year were surrounded by hundreds of new, thriving seedlings. Johann is definitely moving succession toward these wealth-generating members of the plant kingdom.

Howell, J. (2008) On Zimbabwe's Savanna – Tropical Dairy Farming. For the Love of Land. Chapter 41. 433-440.

A traditional large animal veterinarian by training and a specialist in embryo transfer, Percy Sharp of Beatrice, Zimbabwe, is one of those "mainstream guys gone crazy" that you can't help but admire. Percy grew up on the family farm, which the Sharp family still owns and operates, and until the early-90s, managed the farm in line with his conventional agricultural/veterinary training. The farm survived all those years, but it didn't thrive. Percy had a grander vision, and realized that continuing down the same path would only propel him and his family further away from that vision. Percy knew he had to start thinking outside the box. Now, at the dawn of the new millennium, the Sharp dairy, in every aspect of its management, is one of the world's great examples of truly sustainable, holistically sound agriculture.

Malmberg, T, J. Howell (2008) Surviving or Thriving in Drought. In Practice. (117) 10-13. From 1978 – 2009 Tony, Andrea, and KD Malmberg owned and managed Twin Creek Ranch, just a little southeast of Lander, Wyoming. At Twin Creek, a normal year sees a scant 8.5 inches (213 mm) of precipitation, erratically spread throughout the year, and temperature extremes from 105 to -25 F(41 to -32C).

In the process of managing their livestock and trying to make a living, found themselves scrambling to adjust to the worst eight-year drought in recorded history. Here is their

story of how they arrived at this drought, how they've negotiated the drought, and how their ranch's ecological base has "weathered" the drought. Most importantly, it's the story of lessons learned throughout this tough period, and how those lessons will help all of us negotiate more tough times down the road.

Reid, R. (2004) Wool Production and Biodiversity Working Together for Tim and Karen Wright: A Case Study. Land, Water & Wool Northern Tablelands Project, University of New England, Australia. 1-12.

Summary: Lana is a 4,000-hectare sheep property in New England Tablelands region of New South Wales, Australia. Owners introduced holistic management approach in mid-1990s because of degradation of pastures and poor profitability. Results achieved include:

- Changed from high inputs (fertilizers, sown pastures) to low input system, which reduced fertilizer use by 70%.
- 100% return on investment in extra fencing within 2 years.
- Wool yield increased from 73-74% to 78-80%.
- Labor costs cut in half.
- Maintained healthy gross margins of $200 per ha. during 2002 drought, when area had lowest rainfall on record and neighboring farmers suffered financial stress.

Profile of good stewardship: the Rafter F Cattle Company. The Quivira Coalition, Vol. 4, No. 2, 8-11. (Mar 2001).

This case study of ranch in New Mexico, USA by United State's non-profit organization features Rafter F Ranch is a 4,779-hectare property in San Jon, New Mexico. Soil erosion and mesquite tree encroachment were characteristic of this land in the early 1980s. Owner Roger Bowe began implementing holistic management approach in 1984, with following results:

- Biological monitoring showed marked improvement of the land over 5-8 years:
- Perennial grass species – which provide good forage – tripled;
- Infestation by snakeweed reduced from 11% in some to just 1%; and
- Improved water cycle was indicated by a dry well (dry since 1950) that filled with 9 feet of water and dry springs that began flowing.

Financial performance was also transformed:

- Stocking rate tripled;

- Cost of production more than halved (from $0.60 per pound of beef in 1983 to $0.26 in 1990);
- Net income per acre grew from $5.84 in 1984 to $22.5 in 1992; and
- Return on investment in fencing and water points estimated at 1,000%

In 1993 Bowe was selected as a regional winner of the National Cattleman's Association's Environmental Stewardship Award.

Spring, C. (2004) Grazing for Change: Interview with Joe Morris. Bay Nature. Apr-June, 1-3

When two hikers complained to California State Park rangers recently about an area severely trampled by grazing cows, they drew on a strong current of suspicion that many people feel toward ranchers. And why not? Past ranching and range-management practices, even if undertaken with the latest research and the best intentions, have sometimes done significant damage across the American West, destroying stream banks and driving out native plants. But the hikers had it wrong this time. Meet Joe Morris, the owner of those cattle and others that roam on 7,500 acres that encompass two state parks and four ranches near San Juan Bautista. This fifth-generation rancher has the health of the land very much in mind.

Hamilton, L. (2004) In Search of the Real Tough Cowboy. The New Farm.

To survive in the 21st century, ranchers need to be skilled natural resource managers—and good communicators. Tony Malmberg didn't stop using the Holistic Management decision-making framework at grazing planning. He used it to improve his relationships and diversify his enterprises resulting in increased revenue, lower expenses, and a stronger community.

Goven, G. (2001) Enhancing Productivity. A New Environmental Intelligence. The Allan Savory Center for Holistic Management. 2.

Neighboring areas from Gene Goven's North Dakota, USA farm average a water infiltration rate of about .8 inches/hour. With planned grazing, Gene has improved his land's water infiltration rate to 6.3 inches/hour. That means that Gene's land is 8 times more able to retain and use water than neighboring properties, which in turn means there is less erosion, less flooding, and improved wildlife habitat. He has further

increased his grazing season to 220 to 270 days and continues to see an increase in wildlife as well.

Dawley, F. (2001) A Change in Values. A New Environmental Intelligence. The Allan Savory Center for Holistic Management. 3.

During a ten-year period of practicing holistically planned grazing, census data collected by California Fish and Game biologists showed that the deer population on the Dawley ranch increased 20 percent; fawns per 100 does have increased tenfold, the average weight is steady and body fat measurements have increased several millimeters. In addition, the ranch now has mountain lions, coyotes, and smaller predators

With Holistic Management and planned grazing the ranch's 100-yard-wide gravelly creek beds are becoming riparian jungles, thickets of cottonwoods, willows, vines, and grasses. The Fish and Game biologist estimates that no fewer than two dozen species of vertebrates are utilizing the gravel bed, and over 160 utilize the riparian area. Now the creek flows until September and never becomes completely dry.

Adams, A. (2001) Of Microsoft and Dung Beetles – The Hansons. A New Environmental Intelligence. The Allan Savory Center for Holistic Management. 9-10.

After practicing Holistic Management on this Eastern Wyoming ranch the first change was an increase in his stocking rate. When Dan Hanson began managing holistically, he needed 50 acres per animal. He now only needs 24 acres, thus doubling his stocking rate over the course of 9 years. Because of his planned grazing he no longer continuously grazed the riparian areas on his property so more willows and cottonwoods grew along his streambeds. Likewise, because of the healthier riparian areas, the increase of grass, and the decrease of bare ground, his wildlife habitat improved, and he saw more sharptail grouse, turkeys, and Hungarian partridges. Dan Hanson is most excited about was the return of the dung beetles. Because of the increased soil fertility that the dung beetles facilitate and improved functioning of all four ecosystem processes there is an increase in the diversity of grass species, which have led to a longer growing season. With more species, more plants are likely to be growing at any one time. Therefore the Hanson's increased their growing season by two to three weeks. Combined with his increased stocking rate, Dan saw an increase in profit. He increased his profit even more when he was able to reduce his supplemental feed and mineral expenses from $50 per head to $22 because of increased and improved forage.

Smith, A. (2001) Adversity and Creativity. A New Environmental Intelligence. The Allan Savory Center for Holistic Management. 15-17.

The adversity the Smith's faced during the 80's was the catalyst for change they needed. It gave them the courage to shrug off peer pressure and overcome their fear to change. Though they admit they made mistakes, and always will, the Holistic Management decision-making process has always enabled them to get back on track quickly. Whenever they've been sidetracked they claim it has been because they fell back into the deeply ingrained habit of making decisions the old way. Holistic Management allowed them to reduce debt, keep their ranch, forge new alliances, improve ecological function, and lead fulfilling lives.

King, G. (2001) Turning Round the Family Farm. A New Environmental Intelligence. The Allan Savory Center for Holistic Management. 28-30.

In 1997, George King took over management of his family farm at Coombing Park, Carcoar, in the central tablelands of New South Wales, Australia. The property here was once considered one of the best-managed properties in New South Wales in the 1950 and 1960s because they had the most modern pasture improvement and super phosphate programs. They were importing genetics from Scotland for the cattle stud, and the progeny were sought after from all parts of Australia. They were sure they had discovered the best system for managing the farm, so they decided it would be best to not make any changes.

However, when George started farming after his grandfather had passed on, the property was completely uneconomical. He started running 4,200 breeding merino ewes, 1,200 weathers and approximately 500 breeding cows on 6,000 acres. They increased the acreage to 10,000 acres (4,000 hectares) with the purchase of an adjoining farm and are now running 2,500 breeding cows.

One of the things that Holistic Management has allowed the King's to do, while dramatically increasing our stocking rate, is massively increase the biodiversity of their farm. They have many more birds (both in numbers and species) than we used to. Trees are regenerating again and are healthy. They also have thicker pastures. Holistic Management has also helped us control our cost of production.

Montagne, C., Orchard, C. (2001) Holistic Management Gets Results in the Northern Rockies. A New Environmental Intelligence. The Allan Savory Center for Holistic Management. 28-30.

Between 1991 and 1993 Charley Orchard surveyed a large group of ranchers in an attempt to document the changes they had experienced as a result of Holistic Management. At the time of this very early-on assessment, Holistic Management had experienced a seemingly slow rate of adoption. This survey shows that the innovation of Holistic Management exhibits a high degree of relative advantage and observable change. It further demonstrates a high degree of compatibility with the existing values

and needs of the rancher survey population. However, the complex nature of the Holistic Management concepts, coupled with the required management intensity, make the adoption process more difficult. Because of its holistic nature, Holistic Management requires an "all or nothing" paradigm shift commitment. At the time of this research there was a paucity of "hard evidence" substantiating its claims of success. This necessitated a great deal of trust in the paradigm itself, which may have increased the amount of risk perceived by a new practitioner.

The research showed that Holistic Management is strongest in the areas of relative advantage, compatibility, and observability, while it is weaker in simplicity and ease of use, and trialability. The marginal reaction test suggests that greatest progress can be made in adoption of Holistic Management by developing methods to make it more easily understood and easier to use. Holistic Management requires a high level of commitment. Practitioners of Holistic Management make a commitment to establish goals for themselves and the land. Holistic managers must be committed to achieving these goals, and, based on this study's results, they are. For the respondents, ranching is no longer viewed as simply "a way of life," it has become a business, centered on "a way of life." The Holistic Management process has helped them plan to achieve future desires; it has improved their happiness, finances and land. Many of these ranchers appear to have the attitude that their business cannot fail – one way or another, it will work. This commitment, probably more than anything, has contributed to the success of their ranches. The thesis contends that Holistic Management process may not be the final answer, but it is a harbinger to a new awareness and approach for agriculture and resource management.

Joyce, S. (2000) Change the Management and What Happens – A Producer's Perspective. Tropical Grasslands 34, 223-229.

The paper begins with a brief outline of old management practices including: land clearing, introduced pastures, fire, high external inputs, focus on animal genetics and individual animal performance, high cost of production, acceptance of 'run-down' in the natural resource base and continuous grazing. The focus on production has been detrimental to soil fertility and has led to drastic modification of landscapes. Secondly, an outline of the replacement management practices, which incorporate: timber retention, focus on native pastures, pasture diversity, nil fire, focus on kilograms produced per hectare and low cost of production, is presented. The new management package has led to an improving natural resource base, through Cell Grazing, a method that incorporates rest and whole system management*. Finally, an outline is included of the results we have been able to achieve in a relatively short time at 'Duke's Plain.' Specific results include: improvement to the natural resource through more diverse pastures, improved water quality, better water-use efficiency, increased carrying capacity, easier animal management, reduced labour requirement, more trees and fewer weeds. Our

performance is benchmarked annually against that of other graziers. In conclusion, I challenge all of us to question the 'conventional wisdom' of our old systems. At Duke's Plain,' Theodore, central Queensland, we have changed our land management quite dramatically in the past decade. One of the key changes was the introduction of Cell Grazing in July 1993 with the establishment of 8 cells. By June 1994, we had combined mobs of cattle to provide 21 cells, covering the whole property. In my paper, I will outline the characteristics of the old and the new management systems and the benefits that have accrued during the past 7 years.

* Note: In the early days of what was then called Holistic Resource Management, ranchers called the holistic grazing planning process cell grazing because an effective way to create multiple paddocks was by having a cell with a central water point. Nowadays, the use of portable electric fencing, low stress livestock handling, and innovations in herding techniques bring cost effective options to infrastructure dilemmas of the past. Now it is easier than ever to properly manage livestock through Holistic Management on the diverse types of grasslands found throughout the world.

Sparke, R. (2000) Cell Grazing – A Producer's Perspective. Tropical Grasslands 34, 219-222.

Case study by farmer who began Holistic Management on 'Wirranda' in Moura, Queensland, Australia in 1994 because of declining productivity. Results achieved between 1994 and 1998 include:

- Amount of beef produced per hectare almost doubled, from 1,800 kg to 3,500 kg;
- Rainfall-adjusted carrying capacity almost doubled, from 28 beast days/hectare/100 mm rainfall to 45 beast days/hectare/100mm rainfall;
- Cost of production fell from $1.10 per kg beef to $0.40 per kg; and
- Return on assets managed rose from average of 2% before introduction of new grazing system to 7.5% in 1999.

Kramer, J., J. Printz, J. Richardson, G. Goven (1992) Managing Grass, Small Grains, and Cattle. Rangelands 14(4) 214-216.

The Goven Ranch is an 1800 acre cattle and small grain operation located in McLean county, North Dakota. From 1967 to 1986, Gene Goven practiced different grazing management systems. In 1986, he made the shift to Holistic Management and Holistic Planned Grazing (referred in the article as Holistic Management's former name, Holistic Resource Management or HRM). One of the first observed changes in land health occurred in cool season plants; the use of grazing planning allowed the grazing of cool season plants early in the season and extended recovery periods, which improved the

vigor and growth of these plants. Additionally, a “leap frog” approach to paddock movements eliminated the need for fly control, as the distance between “cow pies” self-limited fly populations.

The economic and animal performance data show the power of Holistic Management to improve ranch profitability. His 205 adjusted day weaning weights have increased from 480 pounds prior to 1982 to 545 in 1989. At an assumed, constant price of $.65 Goven has more than tripled his income from his herd within eight years.

Comparative soil data from holistically managed paddocks, season long continuously grazed paddocks and an area in total rest showed that levels of percent organic matter were higher on the holistically managed paddocks than all others examined. Data gathered by using the air entry permeameter showed that the thin upland site in the holistically managed pastures was able to take six times as much water per hour as was the wet meadow site. The excessive build up of over-rested biomass on the total rest area actually had a water shedding effect, as the area has not been utilized for 50 years.