

LESSONS LEARNED IN AUSTRALIA - UK FORAGES STUDY TOUR

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In September 2013, twenty Kentuckians traveled to Australia to tour farms and attend the International Grasslands Congress. The group included ten county agents, five farmers, four UK faculty/staff and a teacher. This study tour allowed participants to gain a new perspective of agriculture and how Australian farmers deal with adversity. Farmers there face many challenges each year with change in precipitation, ranging from severe drought to flooding. These challenges have forced them to incorporate different methods to be successful, including intensive grazing, use of overhead and drip irrigation for pasture and hay production, and fallow farming.

The planted forages used where the group toured (eastern New South Wales) are primarily alfalfa (called lucerne), ladino and red clover, phalaris (a relative of reed canarygrass), novel endophyte fescue, annual ryegrass, perennial ryegrass, and kikuyu. Kikuyu is a warm season perennial grass similar to bermudagrass but with higher quality. It is the main pasture grass used on the coast and some inland, and it is often overseeded with annual ryegrass in late fall, winter and spring to provide nearly year round grazing. Kikuyu is drought tolerant, withstands high stocking rates, responds well to grazing and is highly competitive with weeds. Like bermudagrass, it responds well to nitrogen fertilizer. Kentucky 31 tall fescue has never been introduced in Australia because of fescue toxicity. Earlier introductions of endophyte free fescue have been largely unsuccessful due to poor seedling vigor and short lived stands. Novel endophyte fescue use is on the rise.

Tour participants traveled in two of Australia's six states—Queensland and New South Wales. New South Wales alone is nearly eight times the size of Kentucky. Terrain and plants varied in the traveled areas and included coastal land, rain forests, mountains and valleys. The average farm size in New South Wales is about 3,100 acres.

The group's first stop was the Commonwealth Scientific and Industrial Research Organization near Townsville, Queensland. CSIRO is Australia's national science agency and one of the largest and most diverse research agencies in the world. They

carry out research much like the United States Department of Agriculture, the National Institute of Health and the National Science Foundation do here in the United States.

One of the first things learned at the CSIRO research farm is that kangaroos are pests. While kangaroos are often considered iconic of Australia, they are pests on farms because they compete with livestock for a limited forage supply. One average sized kangaroo can consume as much forage as a mature ewe. Regulations have increased over the last several decades, and permits are required to hunt kangaroos to reduce populations. Kangaroos were plentiful in areas traveled during the tour.

Just like climate change is debated and studied here, the same is true in Australia. CSIRO is currently working on research assessing methane produced by cattle based on forages consumed. The hope is that farmers can reduce methane by choosing specific forages and grazing systems for their cattle. More information about this and other research can be found online at www.csiro.au.

While this trip focused on forages, the group saw other crops on the drive from Brisbane south into New South Wales. Most notable were the sugarcane fields and macadamia nut groves. One interesting practice in sugarcane production is burning the dry undergrowth leaves when the stands are ready to harvest in the late fall and winter. This practice reduces the amount of material that needs to be transported to the sugar mill. Fires could be seen in the distance while driving at night.

The first farm stop was Rockvale North, home to Rob, Sue and Luke McClenaghan. Their farm includes over 5,000 acres, over 5,000 head of merino sheep and 600 head of cattle. The McClenaghans were the first in their region to use management intensive rotational grazing. This helps them overcome the challenges of low rainfall and drought. The average annual rainfall in the nearest town, Armidale, is about 31 inches (+/- 20 inches). The high variability in rainfall from season to season makes livestock management very difficult. Additionally, this area is also prone to flooding. It is not uncommon for 8 – 10 inches of the annual rainfall to occur in one precipitation event. This means there is less rainfall later when crops may need it the most. As Mr. McClenaghan said, “We don’t wonder if there’s going to be drought – it’s just a matter of when. We are always prepared for drought, because the next one may start next week, next month, or next year.”

The McClenaghans’ intensive grazing system has allowed them to farm more sustainably, with reduced fertilizer inputs, improved weed control, and better forage productivity. This has allowed them more resiliency and recovery during and following drought periods.

The biggest income from their farm is the super and ultrafine merino wool. This wool is the grade that is used in high end wool suits that sell for thousands of dollars. Wool value has varied tremendously over the last several years. In 2012, Mr. McClenaghan received \$15 per lb. for ultrafine wool. Before the European financial crisis started a few years ago, they sometimes sold the same type of wool for \$150 per

lb. The average fleece production per sheep in Australia is about 10 lbs., but the ultrafine merino sheep don't produce as much (5-8 lbs).

Interestingly, Great Britain's Prince Charles began a marketing initiative in 2010 called the Campaign for Wool in response to low wool prices. He hoped to encourage interest in this natural fiber and support global wool producers.

Dr. Wal Whalley, Grassland Ecologist with the University of New England, joined our group at Rockvale North. He spoke to the group about forages used on the McClenaghan farm and in the area. Dr. Whalley's research on native grasses has proven that landowners can maintain native grass stands and improve pasture productivity with little input. Examples of productive native grasses in this region include several *Danthonia* species, Kangaroo grass, and Wallaby grass.

Australia is decidedly British in many customs, including afternoon tea. The McClenaghans welcomed the tour group to the sheep shearing shed for tea following the farm tour. Another British custom witnessed there is driving on the left-hand side of the road. This continued scaring many on the bus when they saw oncoming traffic in the right lane.

The group attended the University of New England Robb College Rural Focus Dinner and Lecture as guests of Dr. Whalley. In keeping with the British influence, dinner guests were greeted with bagpipe music as they entered the building. Robb College is the residential college for agriculture & mining degree programs. Coal and other mineral mining are big industries in Australia. Mining is often at odds with agricultural land use in Australia. Many UK participants were surprised to hear the guest lecturer, a mining industry professional, talk about mining's role in the area and industry successes.

Extension exists in Australia but personnel are limited, and government support for Extension has decreased in recent years. For example, New South Wales has only one beef specialist, Todd Andrews, serving the state. Todd rode with the group during part of the trip and shared information about beef production. New South Wales farms account for about one-fourth of the country's beef production, while Queensland farms account for about half. There are many cattle breeds raised on farms in Australia. Brahmin and Brahmin cross cattle are sometimes used because they are better adapted to drought conditions. Angus, Hereford, Shorthorn, Charolais, Belted Galloway, Limousin and Simmental cattle were noted on different farms during the trip.

Todd noted that most Australian consumers prefer grass fed beef because of the higher omega 3 fatty acid content. (According to the U.S. Cattlemen's Beef Promotion and Research Board, one 3.5-ounce serving of grass-finished beef offers 15 milligrams more omega-3 than other kinds of beef. However, in general, beef is not considered a primary source of omega-3 fatty acids.) But since Australia experiences many drought periods, about 10 % of cattle produced also receive grain to supplement forages.

Some farmers also rely on private agriculture consultants like Ross Watson. Ross rode with the group for two days during the trip. His expertise includes pasture establishment and management recommendations for horse and other livestock farms. Ross shared common farming practices and ways farmers deal with the drought. One of these management tools is fallow farming, and he described a typical rotation: Following barley harvest, ground lays fallow (no crop planted) from December through November of the following year. During that time enough rainfall is collected in the soil to sustain the next crop which is usually sorghum, followed by wheat.

Due to the large areas that must be covered, herbicide application to prepare pastures for new seedings is sometimes done by helicopter. Phalaris and novel endophyte fescue may also be seeded in pastures using helicopters, with livestock used to trample the seed in to sow it.

The next farm stop was Sundown Pastoral near Kingstown, New South Wales. This family farm was founded by Neil Statham in 1964 and is still owned and operated by the Statham family. Sundown backgrounds 80,000 head of cattle each year, primarily on pastured forages. Their prime beef is marketed domestically and exported. Their properties total 143,000 acres. 32,000 acres is planted in novel endophyte fescue and clover. They are the largest purchaser of novel endophyte fescue in Australia, perhaps even in the world. The farm also includes cotton, wheat, sorghum, alfalfa hay and other forage crops.

Dung beetles are purchased and released in Sundown's pastures each year to help decompose the cattle manure. This helps recycle nutrients for forages, plus it helps control flies and other livestock pests. This concept is not new, but it is certainly not commonplace in Kentucky. Foxhollow Farm in Oldham County has been using this practice during the last few years.

Another practice not new to Kentuckians but certainly one that should be emphasized is training weaned cattle. When Sundown brings weanlings onto the farm they put them in pens with horses and ATV's to accustom them to people and handling methods. Acclimating cattle to their surroundings and working practices typically results in calmer, easier-to-move animals. Their working facility is large and includes scales and a tag reader system to track each animal.

The group also visited a dairy farm co-owned and managed by Rob Cooper near Upper Manilla. The operation includes 1,000 cows and 800 heifers on 8,000 acres. This area receives only about 25 inches of annual precipitation each year, so irrigation is used on the farm. The dairy herd gets 2/3 of its daily ration from pasture and 1/3 from grain grown on the farm. Mr. Cooper uses GPS collars on the cattle to monitor animal health and heat cycles. UK Extension has researched this practice with several farms in the state, including Harvest Home Dairy in Oldham County.

Like Kentucky, Australia has seen its share of dairy operations being sold or going out of the business. Over the last twenty years, the number of dairies has

dropped dramatically. For example, in just one small region of New South Wales (the Dorrigo Plateau) the number of dairy farms dropped from 150 to 20

Manuka Chaff, owned and operated by David and Martin Wallis, was another farm toured by the group. The Wallises grow oats, wheat and alfalfa—these are chopped to produce fodder called chaff. He also produces baleage. Chaff and baleage are sold for horse and other livestock. These products are processed and bagged on the farm in 20 kilogram packages. They also process and bag crops for other producers, including hemp which is marketed as horse stall bedding.

The most surprising practice at Manuka Chaff was the use of drip tape irrigation installed in alfalfa fields. Because water use is limited there, they decided to install this system to guarantee the success of their alfalfa crops.

The final farm stop before heading to Sydney for the Grasslands Congress was Coolmore Stud. Coolmore is the sister farm to Ashford Stud in Woodford County and Coolmore Ireland. Coolmore Stud is made up of 7,500 acres in the Hunter Valley. The farm has 1,000 horses, including 600 mares that produce around 300 foals. Thirteen international quality stallions stand here each spring. Coolmore also has many shuttle stallions used in Ireland and Kentucky during the northern breeding season and in Argentina and Australia during the southern breeding system.

Coolmore uses rotational grazing systems for thoroughbreds and uses pasture irrigation to maximize production. Coolmore also runs beef cattle on the farm—something typically not seen on Kentucky horse farms.

Attending the International Grasslands Congress gave participants opportunities to meet forage researchers from around the world and hear about findings that could benefit Kentucky farmers. A key point made in the opening session was the rising world population and food production needs. Jimmy Smith, Director General of the International Livestock Research Institute, pointed out that by 2050, 60% more food must be produced to meet needs of population. There is a great demand for meat in diets of those living in developing countries. He predicted that 1/3 of the world's small farms would become larger to help meet this need, and that the role of the 'weekend' farmer was also important in feeding the world.

Another focus of the conference was climate change. Similar to the U.S., it was clear that not all scientists at the conference agree on what constitutes climate change and what effect humans have on climate. One thing scientists seemed to agree on was that a rise in atmospheric carbon dioxide actually favored legume production over grasses.

Concern for the future of forage research and Extension or Extension-like entities was also expressed. The number of forage professionals is not increasing, and speakers noted the need for more people to continue research in this field.

Researchers commented about their need for Extension personnel to communicate their findings with farmers.

The Farmer Forum was a highlight of the conference. Farmers from around the world were filmed and featured in a video highlighting their forage operations. Several of these farmers attended the conference and were available to answer questions.

Through the film, participants could see farms in both developed and undeveloped countries, look at the farm business through each farmer's eyes, and appreciate the diverse challenges each faces. Perhaps one of the most striking images was a farmer from a developing country who manually harvested forage and carried it to her dairy cows and goats daily. Her forage system was set up this way because of the limited acreage of her farm.

Fayette County farmer Todd Clark was a featured U.S. farmer in the film. He raises turkeys, sheep, cattle, hay and tobacco. His livestock are raised to provide meat for local consumers. It was special for Kentucky participants to see Todd representing Kentucky's little spot on the globe and share about his farm business.

Most importantly, the film showed that no matter the cultural differences that exist, farmers share many of the same aspirations and needs no matter where they live or the size of their operation. The trip was a once in a lifetime learning opportunity for participants, thanks in large part to graduate student Krista Lea, who organized travel and logistics and was part of the tour group; Dr. Gary Palmer, who provided financial assistance for agent participation; and the Forage & Grassland Foundation, which provided financial assistance for farmer and young scientist participation.

