

# RESEARCH IMPACT

## Sustainable Livestock Grazing in Western China

Changing herding practices for economic, social and environmental benefits



Charles Sturt  
University



***“It’s about giving the herders...things to do that will make impact at low cost”.***

Colin Langford, sheep management specialist

The Chinese government is committed to improving their seriously degraded grasslands and the economic and social wellbeing of herders, investing \$2 billion per year in their grassland programs. Professor David Kemp with Dr Karl Behrendt and Charles Sturt University Adjuncts Drs David Michalk, Warwick Badgery and Taro Takahashi, and Colin Langford, have been key members of a team invited to China to work with local institutions doing research in support of these objectives.

Animals are severely limited by feed supply across China. Modelling revealed that most farms had up to half of their animals costing more than they would return in income. Grazing experiments showed a fifty percent reduction in stocking rates was needed to improve and sustain the grasslands. Modelling also showed that better nutrition of livestock meant higher net incomes.

Farm demonstrations and continuing farm surveys have shown that herders who have reduced animal numbers have higher incomes and observations to date indicate their grasslands are now in better condition. The principles from this work are accepted by the Chinese Government.

### Changing herding practices

When asked what the grasslands used to be like, older herders in western China said, “we had trouble finding the cattle in the grassland, now we can see the mice”. In many cases it won’t be possible to return to the state of grasslands in the 1940’s, but conditions can improve.

Reduced stocking rates and no grazing when plants start to grow in early summer resulted in more desirable grass growth and more production per head from livestock over summer. Herders are adopting these practices and increasing the quantity and quality of meat, milk, wool, cashmere and other products produced. Government policies have changed to focus on balancing supply and demand, and to establishing sustainable stocking ratios. A focus on production per head, rather than production per hectare, reinforces the need to reduce stocking rates.

Herders have traditionally taken animals out to graze every day of the year. The program has shown that for the nine months when temperatures are at, or well below zero, animals lose less weight if kept in warm sheds. This is now common practice across northern China. The research shows that grazing in winter severely reduced grassland growth in the next summer.

## Challenge

China has almost 400 million hectares of grasslands, 90% of which are regarded as degraded. The grasslands support the livelihoods of sixteen million people in north-western China directly, and many more indirectly. Average stocking rates across China have increased four-fold since 1950. Policy and practice changes are needed.

## Discovery

Systems research led by Professor David Kemp, with Dr Karl Behrendt and collaborators from Australia and China, showed that a 50% reduction in stocking rates can rehabilitate grasslands and improve herder household incomes, through herder surveys and discussions, modelling grazing livestock systems, using farm demonstrations and doing extensive grazing management research.

## Impact

Practices and policies to improve household incomes and rehabilitate the degraded landscapes have been developed by this research. Chinese herders have reorganised livestock systems, improved marketing, and are now adopting sustainable management practices that reduce grazing pressures and improve net financial returns from livestock.

## Impacting economic wellbeing of herding communities

The herders who live and work on the grasslands in western China are some of the poorest people in China. The economic benefits of running smaller, better quality flocks or herds have been substantial. Investigating grazing systems management and marketing has also improved the income of herders.

The impacts at a personal level are obvious for a herder named Buhechaolu, who visited Australia to better understand improved livestock and grassland management. In 2007 he had 1200 sheep to support his family. By 2009 he had reduced his flock to 450 sheep and carried out summer grazing and winter sheep feeding. His sheep now grow faster, and his net income has more than tripled.

The communities where the practices from the research have been adopted have experienced improved economic circumstances.



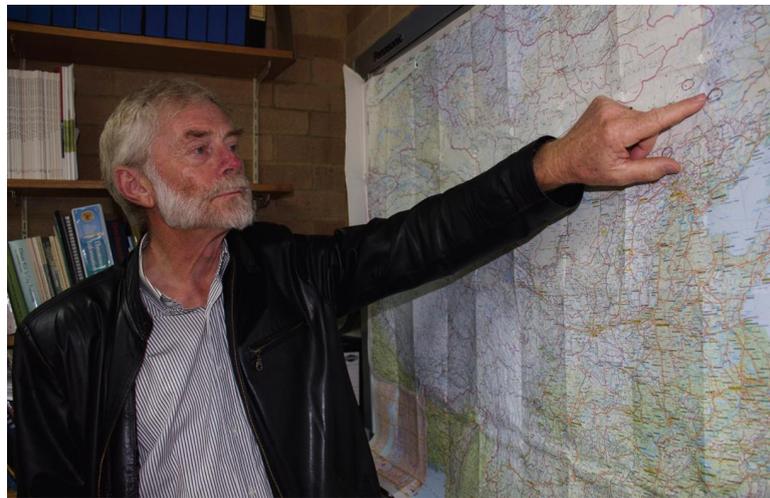
## Program Highlights

- Engaging with herders, academics and officials at all six levels of government to bring about change in China.
- Models developed to analyse the options for improving livestock systems and grassland sustainability.
- Research run with case study communities, on demonstration farms, means improvements from changing practices can be experienced first-hand by herders.
- Long term funding from successive Australian governments.
- Findings from the research helping to secure research funding (\$40 million) for Chinese collaborators to do the associated studies.

### Funding and Collaborators

This program has been mainly funded by the Australian Centre for International Agricultural Research (ACIAR), with some specific components from the Department of Agriculture, Fisheries & Forestry and the Australian Greenhouse Office.

Partner organisations in China: China Agricultural University, Gansu Grassland Ecological Research Institute (Lanzhou University), Gansu Agricultural University and Gansu Academy of Agricultural Science, Inner Mongolia Agricultural University, the Institute for Grassland Research (Chinese Academy of Agricultural Sciences – CAAS), Research Centre for Rural Economy (Ministry of Agriculture), and the Institute of Environment and Sustainable Development for Agriculture (CAAS).



***“Our program came down to helping herders find ways to improve their grassland, restore it back to a more productive state, and to improve the income of herders”.***

Professor David Kemp

### Recognition within China

Any new practice which becomes accepted at the policy level in China is implemented in the government’s five-year plans. Advice generated from the research to reduce stocking rates has been included in the most recent five-year plan, emphasising a change from a policy of continual increase of animal numbers in the region, to one of a balance between food supply and animal demand. Information from this research program has informed the annual agricultural plan of the Chinese Government since 2011.

Professor Kemp was awarded The People’s Republic of China Friendship Award in 2015. This prestigious award is China’s highest award for foreign experts who have made outstanding contributions to the country’s economic and social progress.

***“Grassland environment got better and local herders net income increased because we found the trade-off between grassland condition and local economic enhancement”.***

Professor Han Guodong, Dean, College of Ecology and Environmental Science, Inner Mongolia Agricultural University

More Information is available at:  
[Http://aciar.gov.au/project/lps/2001/094](http://aciar.gov.au/project/lps/2001/094)

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