

Antecedents of the ACIAR Project: 1984–97*

In September 1997, in the offices of the Shijiazhuang Institute of Agricultural Modernisation in ‘Stone family village’ (石家庄), scientists from China and Australia attended the first action meeting of a project supported by the Australian Centre for International Agricultural Research (ACIAR) entitled ‘Regional Water and Soil Assessment for Managing Sustainable Agriculture’. The project drew together scientists from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Australia and from a number of organisations in China to tackle serious issues facing sustainable agriculture in the two countries.

As we all know, ‘a river has its source, a tree its roots’ (水有源, 树有根), so behind the gathering lay a time of building, exchange and development that every good project should have as a solid foundation.

The Chinese philosopher Laozi (ca 500 BC) was tired of trying to convince kings and emperors (and also ordinary people for that matter) to behave well. As he was riding out of the city gate on a buffalo, the guard begged him to write his philosophy down for people who wished to listen. The result was the *Daode Jing* (老子 – 道德经), ‘the power of the way’ or Tao. One of its recommendations states:

合抱之木生于毫末, 九层之台起于累土,
千里之行始于足下。

The greatest tree comes from a tiny sprout, the highest building from a spade of earth, the longest journey starts from a single step.

The single step involved in this project could well be traced to one of the tired steps of three Chinese

scientists arriving in Australia after a long series of flights at the beginning of 1984. Li Rui, Tian Guoliang and Xiang Yueqin arrived in Australia for two-year visits to work at CSIRO. Li and Tian worked at the Division of Land Use Research; Xiang worked mainly at Plant Industry and Environmental Mechanics but also on projects at Land Use Research.

These visits were initial steps in improving interactions between CSIRO and the Chinese Academy of Sciences (CAS) as China embraced the ‘four modernisations’ (四个现代化) of agriculture, industry, national defence and science and technology. A formal agreement for exchanges between CAS and CSIRO followed in 1985; it still helps many scientists from the two organisations to work together and visit each other’s countries.

Li Rui came from the Northwest Institute of Soil and Water Conservation in Yangling, Shaanxi. He brought stories and information about the great yellow earth Loess Plateau (黄土高原) of China and its vast scales of erosion and sedimentation as well as about the ‘tiny sprouts’ of reforestation people were pursuing. He was interested in geographic information systems (GIS) and remote sensing and how they could help map and manage such expanses. When he returned to China he set up links to allow a microcomputer based image processing system (‘microBRIAN’, developed by CSIRO) to be introduced into China and established a basis for exchanges and joint projects with the CSIRO Divisions of Land Use Research and Soils.

Two CSIRO scientists, Peter Laut and Barbara Harrison, visited Yangling in 1986 and 1988.

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ACIAR 课题前面的事 — 1984—97

1997年9月在石家庄农业现代化研究所，来自澳大利亚的科学家和他们的中国同行召开了“区域农业持续发展中的水土资源评价”项目的第一次行动会议。项目由澳大利亚国际农业研究中心（ACIAR）资助。该课题召集了来自澳大利亚联邦科学与工业研究组织（CSIRO）和中国科学院等单位的科学家携手解决两国持续农业面临的严重问题。

众所周知，水有源，树有根。在这次济济一堂的聚会背后，也同样有着长时间的铺垫准备、切磋交流和改进提高过程，这是每个好的课题都应该有的坚实的基础。

大约在公元前500年，中国有个哲学家老子。他厌倦了对诸侯和百姓的讲说，就骑着青牛飘然离去。在函谷关有戍卒请求他写下他的学说，留给那些愿意倾听的人。这便是后世流传的《道德经》。书中写到：

合抱之木生于毫末，九层之台起于累土，千里之行始于足下。

1984年初，经过一连串的飞行后，三个中国科学家来到了澳大利亚。我们的这个课题就由此始于他们疲惫的“足下”。李锐、田国良和项月琴来到CSIRO进行为期两年的访问研究。李锐和田国良在CSIRO土地利用研究所，项月琴主要在植物所和环境力学所，但在土地利用所也有课题。

这些访问发生在CSIRO和中国科学院加深交往的初期，当时中国正着手实现工业、农业、国防和科技四个现代化。1985年，中国科学院和CSIRO正式签订了人员交流协议。它至今在两个机构的科学家合作、互访活动中起着积极的促进作用。

李锐来自陕西杨陵，西北水土保持研究所。他带来了许许多多的故事和资料，有关中国那个黄色的苍茫的高原、巨量的侵蚀和泥沙，以及人们坚持不懈种植“毫末”期盼长成合抱之木的事。他对地理信息系统和遥感以及如何将它们应用到广阔的黄土高原的制图和治理上兴趣盎然。回到中国后，他多方联系，把CSIRO开发的microBRIAN微机图像处理系统引进到中国，同时也建立了与CSIRO土地利用所和土壤所的交流、合作研究的基础。

Initially, microBRIAN worked as well as could be expected in an environment where there were few computers and fewer parts. Over the coming years, the benefits of the advancing modernisation and proliferation of microcomputers was very clear to everyone who had struggled at the beginning. Peter Laut, a geomorphologist, certainly returned from his visits very keen to see links with Yangling increase and Australians become aware of the pioneering work being done by Chinese scientists to combat the soil and water problems of the Loess Plateau.

Awareness of the common issues of drought and water use in Australia and China were developed further when Tian Guoliang and scientists from the CSIRO Division of (by now) Water Resources – Tim McVicar and David Jupp – renewed collaboration. They began a project on soil moisture and drought monitoring using advanced very high resolution radiometer (AVHRR) data for the expansive North China Plain (NCP) or the plain of the Huang, Huai and Hai Rivers (华北大平原 or 黄淮海平原). The pilot project was started in 1991 as one of the first Joint Science and Technology Commission (JSTC) projects under the formal science agreement between the science ministries of the Chinese and Australian governments. The work was completed in 1995, with operational monitoring of the NCP being undertaken in China since the project completion.

However, probably the most significant ‘spade of earth’ that was dug at this time came about through the visit to China by the then Chief Executive Officer of CSIRO, Dr John Stocker, in the company of a (youthful) CSIRO international relations officer, Ta-Yan Leong. In May 1992, John visited Yangling following persistent reports of the successful collaboration and the introduction of the CSIRO microBRIAN system. He was entranced by the countryside and the spirit of the people he met. Even the interesting road that then linked Xi’an and Yangling (which people who knew it will never forget) proved a highlight as John, held up for hours

by a traffic jam, experienced the hospitality of Shaanxi villagers. Later in Beijing, at the close of the visit, he and the President of CAS agreed to hold a joint CSIRO–CAS symposium to develop ideas for closer collaboration between Australia and China in studies of water and soil resources.

With considerable effort by many people on both sides — including Li Rui and Tang Keli in China; Graham Allison, Chief of the CSIRO Division of Water Resources in Australia; and Ta-Yan Leong, Rob Fitzpatrick and David Jupp in Australia — a successful symposium was held in Adelaide in November 1994. The workshop focused on salt-affected soils in landscapes, soil water movement and relations and catchment water, sediment and nutrient budgets.¹ Out of this symposium came increased respect, new friendships and much better developed ideas for the most significant issues the two sides could jointly tackle. Participants at the meeting emphasised the importance of water management for the NCP, noting special problems in addition to those of erosion and sedimentation so critical on the Loess Plateau. Many parallels and lessons from the Australian experience were established and incorporated in the ACIAR project when it was finally realised.

A group of CSIRO scientists visited China in June 1995 under the CAS–CSIRO Exchange Program. They made an astounding journey through the Loess Plateau, past the Han Great Wall, Yan’an and the Huangdi Ling and finally across the expanses of the NCP. Ideas on potential collaboration were then selected at a meeting in Beijing. On return to Australia, the Australian delegation started a period of active and detailed project development and evolution, in cooperation with ACIAR with the support and guidance of Ian Willett. The planning and development process considerably refined the

¹ Jupp, D.L.B. and Fitzpatrick, R.W. (1994). CSIRO/CAS Soil and Water Symposium, Adelaide, 21–25 November 1994. Symposium Report, CSIRO Division of Water Resources.

CSIRO 的两个科学家，Peter Laut 和 Barbara Harrison，于 1986 年和 1988 年访问了杨陵。最初，在 microBRIAN 运行的年代，就象你能设想的那样，计算机很少，配件更少。后来的几年里，微机的频繁升级和现代化，对于当初艰难工作的人来说，计算机的优势变得很明显。地貌学家 Peter Laut 从中国归来后，满腔热情希望能加强同杨陵的联系，希望澳大利亚人能了解中国科学家试图解决黄土高原水土问题的开拓性工作。

在田国良和 Tim McVicar 和 David Jupp（当时工作的单位现在改成 CSIRO 水土所）延续了他们的合作的时候，对澳中两国共同存在的干旱与水分利用问题，有了进一步的认识。他们开始了一个使用 AVHRR 数据对华北大平原（也叫黄淮海平原）土壤水分和干旱进行监测的课题。这个试点性的课题，是根据中澳两国政府科学部门的正式科学协议，作为首批 JSTC（联合科技委员会）项目之一，于 1991 年开始的。工作完成于 1995 年，但对华北平原的监测自课题结束后一直在有效地进行着。

然而，这段时期最重要的“累土”恐怕还是由当时的 CSIRO 执行总裁 John Stocker 博士的中国之行铺垫的。当时，有关中澳成功合作以及 CSIRO 的 microBRIAN 系统在中国顺利运行的消息持续传来。1992 年 5 月，在 CSIRO 国际合作局年青有为的官员梁达仁博士的陪同下，John 访问了杨陵。他被当地农村的景象和他遇到的人的心底深深吸引住了。甚至对那条连接杨陵和西安的有趣的马路（人们见过它就永远不会忘记）也留下了深刻的记忆。因交通阻塞，在路上停滞了好几个钟头，John 亲身感受了陕西农民的殷勤好客。后来在北京，当结束访问时，他和中国科学院的院长同意联合举办一次 CSIRO - 中国科学院研讨会，为澳中之间在土地和水资源研究上更密切的合作内容集思广益。

在双方很多人员 - 这其中包括中国的李锐、唐克丽，澳大利亚的 Graham Allison（当时的 CSIRO 水资源研究所所长）、梁达仁、Rob Fitzpatrick 和 David Jupp - 的努力下，1994 年 11 月在阿德来德成功地举办了一个研讨会。该研讨会中心议题是景观中的盐化土壤，土壤水分移动和联系，流域水分、泥沙和养分控制¹。这次会议加深了友情和互相尊重，对那些最明显突出的、双方可以合作解决的议题有了更好的意见和想法。在黄土高原关键的侵蚀和泥沙问题之外，与会人员特别强调了水资源控制对华北平原的重要性。最后的 ACIAR 课题，也融汇了澳大利亚方面的相似问题和教训。

¹ Jupp, D.L.B., Fitzpatrick, R.W. (1994). CSIRO/中国科学院土壤与水资源研讨会, 1994 年 11 月 21—25 日, 阿德来德。研讨会论文集, CSIRO 水资源研究所。

project, aided by the merger of the CSIRO Divisions of Water Resources and Soils into CSIRO Land and Water. In November 1996, representatives of CSIRO and ACIAR visited China to finalise the planning.

The Australian scientists were inspired by working with people who put so much store by the benefits of science. The four modernisations are still valued in China. Recently a marine science delegation checking in at Hangzhou Airport noticed a sign over the counter that read:

学科学, 用科学, 爱科学, 讲科学

Study science, use science, love science, tell [about] science.

Where are such signs in Australian airports?

At this early stage of the story, we could say ‘The river is clear and the sea calm’ (河清海晏) as it all came together. The next and the most important part is the topic of this report. The careful and systematic processes of ACIAR review and

development were complete with the commencement of the official project in July 1997 and the start of work at the meeting of scientists from the two countries in Shijiazhuang in September 1997. However, just as the water present at the source of a river is unlikely to be present at the mouth — or certainly will not contribute greatly to its volume — so the people who eventually carried out the project were mostly a new group, fresh and keen to resolve issues and problems of water and soil faced by the two countries.

And yet the pleasure of all involved, new and old, in both countries at the start of the project and the culmination of the many years of work and friendships, was no less than that of Li Bai as he headed for home from exile along the Yangzi:

两岸猿声啼不住,
轻舟已过万重山.

Apes along the river’s banks call without ceasing,
the journey has passed through countless hills and valleys.

1995年6月，在中科院—CSIRO交换项目下，一批澳大利亚科学家访问了中国。这次充满惊奇的旅程跨越黄土高原，穿过汉长城、延安和黄帝陵，再横穿辽阔的华北平原。然后在北京双方商谈了可能的合作议题。回到澳大利亚后，澳科学家同ACIAR合作，在Ian Willett支持、指导下，开始了紧张繁忙的项目的具体规划和评估。立项、修改、论证过程大大精炼、明确了课题内容。其间CSIRO土壤研究所和水资源研究所合并成一个水土资源研究所，这件事也促进了课题的成功。1996年11月，CSIRO和ACIAR的代表访问了中国并最后敲定了该计划。

中国人民对科学的高度尊重，深深激励着参与合作的澳大利亚科学家。时至今日中国依然重视四个现代化。最近一个海洋科学代表团在杭州机场办理登机手续时，注意到柜台上面的一个标语：

学科学，用科学，爱科学，讲科学

澳大利亚的机场有这样的标语吗？

至此，我们可以说，第一阶段的故事已河清海晏，接下来的内容，同时也是最重要的内容，将由本书讲述。ACIAR仔细而系统的准备工作和审查论证随着1997年7月课题的正式启动，随着1997年9月两国科学家在石家庄的聚会而结束了。但是，正如一条长长的河流，源头的水很可能无法抵达河口—或者肯定地说，它不可能对水流量有太大的贡献—最终承担本课题的人也基本上是另一波新生力量，执着地要解决两国所面临的土地和水资源问题。

所有课题工作人员，无论参加的早晚，不管在课题的开始，还是在几年工作和友谊后的丰收时期，他们的心情，都不会亚于李白流放途中意外遇赦，沿长江放歌归家的喜悦畅快：

*两岸猿声啼不住，
轻舟已过万重山。*