University of New England

The University’s approach to research
UNE has a track record of excellence in the creation and dissemination of knowledge through innovative basic, applied and interdisciplinary research and productive collaborations.

The University “is committed to serving its regional communities and has traditional strengths in animal breeding and production, environmental and agricultural change, and rural education”. It will consolidate its existing strengths and partnerships and focus growth in areas of potential excellence, particularly in the fields of health and allied health (from the University’s mission-based compact).

Areas of major research concentration
UNE’s three primary areas of research focus are:
- Environmental and agricultural change
- Rural health, and
- Rural and regional education.

Additional priorities are:
- Economics and public policy
- Water research and innovation network.

Research effort is conducted by staff in the Schools (eg School of Health) and in research centres:
- Institute for Rural Futures
- National Centre of Science, ICT and Mathematics Education for Rural & Regional Australia (SiMERR)
- Centre for Applied Research in Social Science
- Centre for Agriculture and Law
- Centre for Higher Education Management & Policy
- Centre for Local Government
- Heritage Futures Research Centre
- Language and Cognition Research Centre.

The most productive fields of research for the 2012 ERA submission in terms of numbers of weighted publications are agriculture, biological sciences, education, studies in human society, and medical and health science. Other fields to be assessed are history and archaeology, psychology, environmental science, language and related fields, economics, earth sciences, commerce and related fields, mathematics, law, philosophy and religious studies, and chemistry.

Impact of research at The University of New England
As formally recognized in the UNE Strategic Plan 2011-2015, UNE is dedicated to identifying and delivering
innovations of value to society and industry, in Australia and internationally, with a particular emphasis on research for rural and regional innovation. Our research is closely integrated into our teaching and training and we work closely with industry and government agencies to identify areas in need of innovation and to ensure that research results are translated into impact.

Education Research - QuickSmart

QuickSmart is an evolutionary literacy and numeracy program developed at UNE which is having a strong impact on low-achieving students.

Research gathered over 10 years shows that use of QuickSmart translates in educational growth of 2 – 3 years over the course of one year, compared with average-achieving students, not using QuickSmart. Furthermore, learning growth continues even after the students exit the QuickSmart program.

The achievements of indigenous students mirror those of non-Indigenous students, with the added benefits of increased engagement in class and improved attendance at school.

The program is now being offered in more than 700 schools around Australia, involving more than 10,000 students. It is also being rolled out in remote communities and being used as preparation for employment for those with limited literacy and numeracy skills (e.g. for jobs in the mining industry.

Agricultural research

UNE is ideally located in close proximity to several key Australian agri-climatic zones and as the leading agricultural teaching and research institution it maintains facilities, expertise and high profile across all core areas of agriculture. The areas of specialization at UNE include animal sciences and production systems, agricultural genetics, crop and pasture agronomy, weed management, ecosystem management, soil systems and agricultural economics, business and policy.

Our expertise is reflected in strong involvement in Agricultural CRCs with 3 CRCs (Beef, Sheep, Poultry) headquartered at UNE and strong UNE involvement in the Weeds, Cotton, Dairy and Spatial Information CRCs.

UNE is the leading Australian University in Animal Production.

As an indicator of the relevance of UNE’s R&D, a high proportion of the external research funding comes from industry, primarily the RDCs but increasingly also national and international businesses and agencies, reflecting the proven track record in delivery of research solutions that are both innovative and relevant.

A small sample of demonstrable impacts of UNE R&D include the following.

- UNE has developed most of the research and all of the technology development that enables the genetic evaluation and improvement programs of the Australian sheep, beef cattle and pig industries, and also for Australia’s largest tree improvement program. The net present value of the sheep and beef improvement programs since the programs began in 1985 to 2010 were estimated by MLA to be $12.8 billion, with current gains of $441m per annum NPV (over 10 years) accelerating at $40m per annum largely based on UNE research results and wholly based on UNE technologies.
- Research funded by the federal government and MLA, introduced a system of measuring performance of Australian sheep in the post-discharge phase of the live export trade to the Middle East region, delivering improved welfare, reduced mortality and improved condition.
- Research on UNE supplemental feed enzymes for poultry to counter the effects of anti-nutritional factors in feed ingredients improved industry feed conversion by 3% worth $21m per annum. This contributed to global application of a derived technology, worth over $1billion in saved costs annually.
- Research into integrated parasite management strategies led to cost-effective systems that are currently being rolled out nationally to dramatically reduce the $361m annual cost of parasite infections in Australia in addition to improving sheep welfare.
- Research into Marek’s disease virus, for which evolution of virulence in the face of vaccination is a worldwide problem costing >$1billion, has resulted in much of the Australian industry moving to tactical vaccination based on UNE developed routine monitoring the virus via molecular analysis of shed dust samples.
- Research on UNE supplemental feed enzymes for poultry to counter the effects of anti-nutritional factors in feed ingredients improved industry feed conversion by 3% worth $21m per annum. This contributed to global application of a derived technology, worth over $1billion in saved costs annually.
- UNE research on weed control led to new procedures for weed control, and the resulting “Guide for Owners” in Australia published in 2010 sold 20,000 copies indicating massive uptake by Australian agriculture.
- In a world-first, UNE scientists developed and registered in Australia a new moth attractant, the Magnet Insect Attractant Technology, that will reduce the $200 million annual damage to crops by Australia’s most serious insect pest, the Helicoverpa caterpillar, while also reducing the
need for farmers to spray broad-acre foliar pesticides.

- Research into the application of fly ash as a soil amendment was a major factor in the exemptions granted under NSW regulations for use of this industrial by-product on farms.

**Collaborative Research Network**

The UNE-led Collaborative Research Network for Mental Health and Well-being in Rural Regions will focus teams in five universities on research capacity building, and on research that will contribute new knowledge towards addressing mental health challenges and advancing well-being across rural regions.

The CRN for Mental health and Well-being in Rural Regions is:

- bringing together UNE plus the Universities of Newcastle, Sydney, La Trobe, NSW, and Hunter New England Area Health Service, to actively build UNE research capacity, targeted joint research programs, and widen partner research

- involves 20 senior and 10 other researchers at UNE and partners, 9.8 post-doctoral fellows, 11 HDR students, with potential doubling of new researchers as the CRN secures grants

- focusing on people and health workforces in regions, investigating questions around self-care including suicide, resilience, disabilities, sexualities, inclusion and health diagnosis

- building a strong network collaboration plus integrated mental health research capacity at UNE particularly skills to research in rural regions including Indigenous health questions

- extend UNE regionality expertise to mental health research as part of UNE’s intention to grow rural health research capacity and community, practice and teaching relevance

- expand links with rural communities and health providers in Northern Inland NSW, Victoria and beyond, to widen research reach of UNE and partners, and to assist extension of findings into policy processes, health practice, and improving social capital.