University of Western Sydney

College of Health & Science

Plants, Animals and the Environment

Research in agriculture, horticulture, animal science and the environment in the College of Health and Science is oriented towards: application; integration of research, business and community engagement; and cooperation across fields. The facilities underpinning this research are diverse, ranging from orchards and animal houses, to a food processing plant and experimental eucalypt forest site.

Agriculture and horticulture

UWS has a century-long tradition of agricultural research and services.

Among the experimental field sites in the College of Health and Science are:

- Cleared agricultural lands
- Many farm dams within close proximity for replicated studies
- Climate-controlled plant-growth cabinets
- A post-harvest controlled environment system and physiology laboratories
- Stone fruit and citrus orchards
- A vineyard
- An olive grove and cleared plots

Animals kept on campus include horses, deer, sheep, reptiles and marsupials, and the School of Natural Sciences even offers agistment facilities for horses. Its experience can be extended to assisting other organisations involved in animal welfare.

Expertise in global positioning and geographic information systems is brought to bear on agricultural studies.

The Centre for Plant and Food Science offers capabilities in:

- Interactions of plants with their environments
- Innovative plant products for horticultural industries
- Sustainable plant production and management systems, emphasising integrated pest and disease management

In addition, the capabilities in chromatography analysis of chemicals in plants available in the School of Natural Science can be applied to examining the concentration of ions in flavour additives and diseased plants.

Food technology and processing

UWS features a pilot plant equipped to process a variety of foods and even a small abattoir as part of its capabilities in this area. It also uses its molecular laboratory and chromatography facilities for food analysis. Other facilities are designed for encapsulation of bacteria and other bioactive molecules for targeted release within living organisms.

For example, UWS researchers are investigating novel delivery systems for probiotics and probiotic-based functional foods and nutraceuticals that are being developed.

The Centre for Plant and Food Science has particular expertise in designing, developing and producing value-added, health-based, safe and nutritious food products; and developing innovative technologies to maintain food quality and nutrition.

The School of Biomedical and Health Sciences' experience in the use of functional genomics is also providing insight into the secrets of making better flavours in beer, wine and bread.

Environmental field sites

Agricultural studies are complemented by field sites that take advantage of UWS's local environment, including:

- Wetlands developed specifically for water reuse
- Remnant woodlands of the Cumberland Plain and River Flat Forest

Forestry

The Centre for Plant and Food Science is undertaking a major study – the Hawkesbury Forest Experiment – that aims to generate predictive understanding of the growth, carbon storage potential and water use of both managed and unmanaged eucalypt forests that are growing in typical Australian, water-limited conditions, and their responses to rising carbon dioxide levels.

An exemplar of UWS's approach to collaboration, this experiment brings together experts from the University of Western Sydney, the University of New South Wales, the University of Technology, Sydney, the NSW Department of Primary Industries, and the Swedish University of Agricultural Sciences. It has attracted substantial funding from the Australian Greenhouse Office.

The experiment includes contrasting watering treatments, to test for the first time the effect of elevated carbon dioxide on productivity of large woody plants with limited water. The results will not only be of interest to the forestry sector, but also to environmental researchers and policy-makers and businesses involved in carbon trading.

In addition, the Centre for Plant and Food Science is well resourced to assist businesses with challenges related to microbiology, soil ecosystems, forest management practices and rehabilitation of native forests.

Wildlife and conservation

Research focusing on reptile health and endangered species is undertaken with parks agencies, world heritage areas and zoos. The University has particular expertise in tracking animals and identifying the needs of species about which little is known.

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