

# Arid Zone Research Institute



AZRI

## BACKGROUND AND HISTORY

Colonel Alfred Lionel Rose (b. 1898 - d. 1980) was an army veteran who served in both world wars. Between wars he studied veterinary science at the University of Sydney, and was offered the role as the Northern Territory's (NT) Chief Veterinary Officer after retiring from the army in 1946.

Upon finding that a number of local cattle dips were far below optimum strength for eliminating ticks, Rose recognised the need for a dedicated agricultural research institute in Alice Springs. A detailed report outlining the region's main stock diseases and effects of poisonous plants – and therefore a requirement for a comprehensive research facility – was submitted to Canberra in 1948, and a 7.65km<sup>2</sup> site seven kilometres south of Alice Springs was chosen.

At this time, the Commonwealth was reluctant to commit financially to a large scale facility, so Rose progressively established his vision over time, starting with a veterinary research service, the employment of specialised staff and gradual development of the farm site.

The first and most overwhelming need was for an Alice Springs laboratory, which was established in 1948. Rose hired a Chief Veterinary Chemist to travel remotely testing cattle dips, and a botanist to examine the poisonous plants which up until that point had resulted in substantial losses of stock.

During the 1950s, the farm site developed to include bores, roads, paddocks and stock yards. Rose believed a testing ground for crops and stock grazing would give confidence to the local industry to develop. Lucerne was the first crop to be grown. By 1955 it was yielding an incredible two tons an acre and eight cuts a year, viewed by some to be the best quality in the country.

At the same time, work carried out by the Animal Industry Branch (AIB) was largely focused on

animal health, particularly cattle, but also horses, sheep, pigs, goats and other animals. Stock route maintenance, plant and animal pathology, animal transport, botanical surveys, the protection of birds and the management of noxious animals (mainly wild dogs and rabbits) were also major responsibilities. Attracting suitably qualified staff was an ongoing problem, complicated by the lack of adequate housing, especially for married officers. There was, however, enough housing for rats and guinea pigs! The AIB kept colonies of guinea pigs, rats and later rabbits which were used mainly in connection with the study of toxic plants. The animals were housed in where today's offices are built in the Eastern Annex.

The Animal Industry Research Institute (AIRI) was nearing completion by the early 1960s. Staff accommodation and offices had been built, and the yards, pens and grazing paddocks constructed. There was a notable absence of a laboratory. At that time the scientific services (pathology, bacteriology, chemistry and botany) were housed in temporary laboratories in town. In addition to providing services to the AIB and other government departments, the laboratories also processed work for the hospital and the general public. After two decades of operations in a temporary facility, the contract was finally let for construction of a new, purpose-built arid zone research laboratory at the farm site in the mid 1960s. As work began, the name 'Arid Zone Research Institute' (AZRI) was often used in relation to the long awaited building, even though the grounds were still identified as AIRI.

On 6 November 1967, nearly 20 years after Rose's comprehensive application, AZRI was officially opened.

# TODAY

In addition to the office complexes, the institute houses cattle and horticultural farming infrastructure, an accredited water microbiology laboratory, a library, staff interim housing and vocational education classrooms. AZRI is home to an award-winning scheme to store recycled water from the town in an underground aquifer for agricultural reuse.

AZRI is also the home of sentinel testing for arboviruses and avian viruses using cattle and chickens.

Research work on AZRI includes intensive horticultural trials and livestock research under the rangelands program.

AZRI has played an important role in national animal and crop disease eradication programs. It has also facilitated pastoral industry access to overseas markets including Singapore, Indonesia, the Philippines, and Hong Kong through work to prove disease freedom.

AZRI is the regional headquarters for geological programs, maintaining information services through the Minerals and Energy InfoCentre, and administration and enforcement of all aspects of the *Mining Management Act*.



*Technical Officer Glen Oliver with newly planted date palm.*



*Water sample is transferred into a sterile vessel to set up analysis.*



*Dr Peter Saville bleeding cattle for testing for exposure to arboviruses such as bluetongue, akabane and bovine ephemeral fever.*



*The mining team inspect the Black Snake historical open cut mine, east of Tennant Creek.*



# Timeline

1929

The completed railway between Adelaide and Alice Springs is a boost to the Central Australian pastoral industry.

1946

Colonel Rose established the Animal Industry Branch of the Northern Territory Administration (AIB), the region's first veterinary research service.

A herbarium is set up in the old army buildings off Hartley Street to research native plants, particularly those poisonous to cattle.

Research commences into horticultural crops such as lucerne, fodder and citrus.

1954

1955

Throughout the 1950s, Central Australian research uncovered NT pastoral industry breakthroughs including treatment of Kimberley 'walkabout' horse disease, discovery of phosphorous deficiency in cattle and understanding of Georgina poisoning of cattle.

A research building is erected seven kilometres out of Alice Springs - Animal Industry Research Institute (AIRI).

130+ scientists from around the world attend the Australian Arid-Zone Research Conference.

1956

1960s

Extensive laboratory and field research takes place for bovine pluro-pneumonia disease. The disease is officially eradicated from the NT in 1973.

1965

The Arid Zone Research Institute (AZRI) is officially opened.

1967

AZRI's core business expands to include the facilitation of regional and Indigenous economic development, and regulation for sustainability.

1980s-1990s

1970s-1980s

1990-2000

The veterinary laboratory services move to Darwin and the herbarium is relocated to the Alice Springs Desert Park. The former isolation yards are upgraded by the Central Australian Camel Industry Association as camel yards.

Horticultural research commences into a diverse range of crops including grapes, dates and stone fruits.

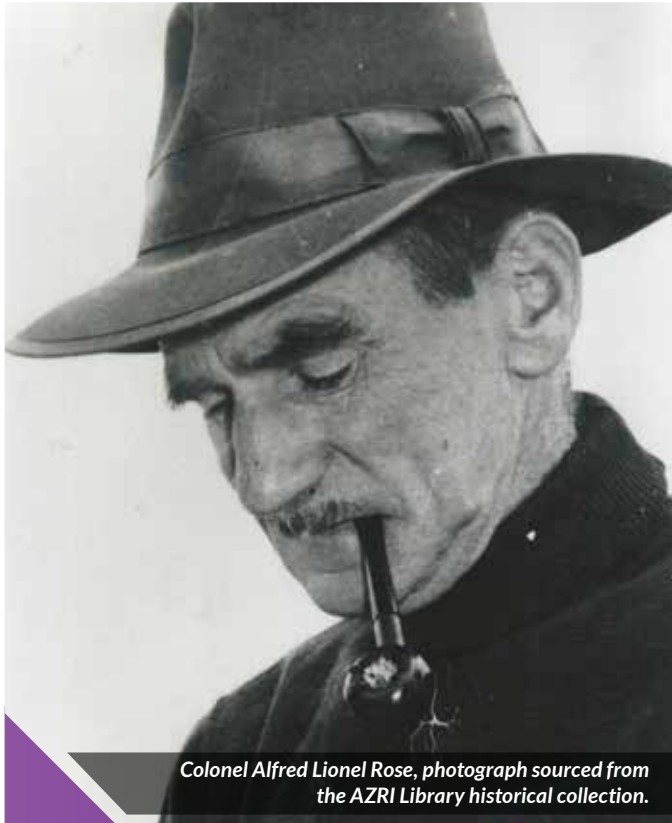
The camel yards are modified for use as an equine facility to accommodate the NT Mounted Police Unit.

2007

2018

AZRI undergoes a refurbishment and celebrates its 50th birthday.

# THE AZRI PIONEERS



Colonel Alfred Lionel Rose, photograph sourced from the AZRI Library historical collection.

## Colonel Alfred Lionel Rose

In true Northern Territory style, the visionary behind the establishment of an ultimate agricultural research institute in Central Australia was an interesting character.

Known as a practical joker, one particular moment in history captured his no-nonsense attitude. During Queen Elizabeth II's visit to Alice Springs in 1963, there was a struggle to quieten the crowd at a formal reception. Colonel Rose boomed, "shut up!" Needless to say, in 1963 the outburst made national headlines.

Rose's perseverance and dedication was crucial to developing agricultural research and the pastoral industry in Central Australia.

Colonel Rose was also instrumental in developing the Northern Territory's live cattle export industry, and designed the Fort Hill yards in Darwin in the 1950s. He passed away in Alice Springs in 1980.

## Frank McEllister

A senior horticulture technical officer based in Alice Springs (1965-1992) who played a major role in developing horticulture in Central Australia. McEllister spent 27 years in field research in Central Australia. Initially, he conducted trials in soil conservation, pasture introduction and irrigated fodder crop. He later branched into horticulture to become a pioneer in grapes,

citrus, stone fruits, dates, olives, pistachios, sweet potatoes and asparagus at AZRI.

## Harry Morris Hocking ('Morrie')

Morrie was a recognised surveyor in Central Australia. In honour of him, the Morrie Hocking Baseline is located at the southern boundary of AZRI serving as a reference point where surveyors can check their electronic distance measuring equipment against the known lengths of the baseline. Now with modern technology, AZRI has a permanent GPS reference point located in the building next to the firefighting tank in addition to monthly surveyor checks on the Morrie Hocking Baseline.

## John Hayes

From the pioneering Hayes family of Central Australia, John joined the AIB in 1963 conducting cattle research. He evaluated spinifex as stock pasture and became a supervisor of all the research stations dealing with cattle industry development before returning to Alice Springs in 1982. He continued on as an executive officer for the department until his death in 1991.

## Peter Hooper

Peter was the first veterinary cadet in the NT in 1957, while undertaking his veterinary science studies. Peter became a veterinary officer in 1960 and worked between Darwin, Katherine and Alice Springs from 1961 - 1968, supervised by Colonel Rose. He completed a PhD in veterinary pathology and became the NT's Chief Veterinary Officer from 1974. Peter was involved with all aspects of animal health in the NT, particularly the investigation of plant poisonings, the Bovine Pleuropneumonia Program, the National Tuberculosis and Brucellosis Eradication campaign and the Bluetongue Virus scare of 1977. Peter retired to Geelong, Victoria.

## Tom Hare

Remembered as the 'father of Territory conservation', Tom devoted 30 years of his life to the preservation and management of land and wildlife. Tom joined the AIB in 1949, was the first to appoint Aboriginal rangers and had a lasting influence on conservation and park management in the NT. He passed away in 1992.

At AZRI, there is a major office building named the Tom Hare Building in his honour. The building hosts staff from the Department of Tourism and Culture and the Department of Environment and Natural Resources.

# AZRI: A COLLABORATIVE SITE

Although initially developed for agricultural research, the site has housed a variety of Northern Territory Government agencies and collaborative partners. Government partners on site have extended to include the Department of Environment and Natural Resources, Department of Tourism and Culture, Department of Education, Mining Operations and Geological Survey, Northern Territory Fire Rescue Services (NTFRS), Northern Territory Police and Power and Water's soil aquifer treatment basins.



- |   |  |   |
|---|--|---|
| 1 AZRI front gate   | 8 Water resources drilling depot   | 15 Bush foods arboretum   |
| 2 Tom Hare building <ul style="list-style-type: none"> <li>• Department of Tourism and Culture</li> <li>• Parks, Wildlife and Heritage Division</li> <li>• Department of Environment and Natural Resources</li> </ul> | 9 AZRI main building <ul style="list-style-type: none"> <li>• Department of Primary Industry and Resources</li> <li>• Department of Environment and Natural Resources</li> </ul> | 16 Farm compound  |
| 3 Flora and fauna compound  | 10 Plant quarantine shed   | 17 Horticulture block <ul style="list-style-type: none"> <li>Experimental crops include:               <ul style="list-style-type: none"> <li>• quinoa</li> <li>• almonds</li> <li>• table grapes</li> <li>• jujube</li> <li>• figs.</li> </ul> </li> </ul> |
| 4 NTFRS containment training  | 11 Eastern Annex <ul style="list-style-type: none"> <li>• Water analysis lab</li> <li>• Biosecurity</li> <li>• Animal Welfare</li> <li>• Berrimah library</li> </ul>             | 18 Sentinel chickens  |
| 5 Vehicle compound  | 12 Mounted Police Unit   | 19 Soil aquifer treatment basins  |
| 6 Pastoral shed   | 13 Dates   | 20 Pastures for sentinel cattle   |
| 7 Chemical store and goods depot  | 14 Lucerne on recycled water   |   |

## The Department of Primary Industry and Resources (DPIR)



In Central Australia, DPIR's focus is on pastoral and horticultural research, livestock and plant biosecurity, animal welfare, water microbiology, professional library services, mining operations and the Northern Territory Geological Survey.

### Pastoral research

DPIR cattle research in Central Australia focuses on pasture management and cattle production in a variable and unpredictable environment. It is coordinated between AZRI and a 550km<sup>2</sup> Old Man Plains (OMP) Research Station approximately 20km south of AZRI.

### Horticulture research

DPIR's objective is to assist with the development and promotion of a sustainable horticultural industry in the Northern Territory. Previous investigations at AZRI have focused on salt tolerance and heat resistance in red-fleshed grapefruit, Navel oranges, lemons and mandarins, stone fruit, pome fruits, olives, figs, dates, roses, Geraldton wax, table grapes, Indian jujubes, pistachios, and asparagus. Bush tomatoes and lucerne production has also occurred. AZRI also has the largest date palm collection in the southern hemisphere, with more than 40 recognised varieties. Since 2016, a new range of crops has been trialled including garlic, quinoa, Chinese dates (jujubes), rock melon, passionfruit and self-pollinating almonds. The focus is to lower the risk for farmers by providing quality agronomic information for the arid zone environment.

### Livestock biosecurity

The Livestock Biosecurity Branch's main responsibility is to ensure compliance with biosecurity legislation and emergency animal disease preparedness. Veterinary officers and livestock biosecurity officers undertake pest and disease investigations on cattle properties to rule out emergency diseases. The branch is also responsible for monitoring livestock movements and identification, regulating abattoirs and implementing the *Livestock Act*.

Sentinel cattle and chickens are also kept at AZRI to provide early warning of a number of arthropod-borne viruses (arboviruses). Some of these viruses can impact the live export trade, such as bluetongue virus. Blood is collected from the sentinel cattle every month and results are forwarded to the National Arbovirus Monitoring Program. Evidence of the circulation of Murray Valley encephalitis, a disease that affects humans, can be detected in chickens. The Department of Health receives blood results from the chickens, provided from December to June (the period of possible virus transmission).

### Plant biosecurity

There are three main components to plant biosecurity in Central Australia: surveillance, containment and compliance with other jurisdictions. Under the National Plant Health Surveillance Program, plant nurseries, market gardens, caravan parks, public areas, plants and machinery are checked regularly to ensure unwanted pests and disease are kept out of the NT. A monitoring program is in place to ensure fruit fly freedom is maintained at Ti Tree and Rocky Hill. DPIR also runs the Interstate Certification Assurance program, which ensures produce entering and leaving the NT complies with plant health regulations.

### Animal welfare

DPIR is responsible for the administration and implementation of the *Animal Protection Act* in the Northern Territory. Animal welfare officers ensure animals are treated humanely and promote community awareness about the welfare of animals in the NT.

### Water Microbiology Laboratory

This laboratory performs essential microbiological analysis of water quality in Central Australia. As a National Association of Testing Authorities (NATA) accredited laboratory, it provides services to the Power and Water Corporation NT, government agencies, private enterprise and members of the public by testing drinking, environmental, waste and dialysis water.

### Arid Zone Research Institute Library

This is the oldest specialised library in the Northern Territory, holding a unique arid zone agricultural collection that covers agriculture, natural resources, rangeland management and local history. The library service provides comprehensive information resources to DPIR staff and external clients. It is the information resource centre for the department's Alice Springs and Barkly region offices.



## Mining Operations and Geological Survey

Central Australia is highly prospective for minerals, with known deposits of copper, gold, vanadium, rare earths, salt and phosphate, with a number of mining projects approaching development and an active exploration sector. Central Australia is also highly prospective for onshore oil and gas, with actively producing fields at Dingo, Mereenie and Palm Valley.

### Mining Operations

Mining Operations regulates environmental management of mining, extractive and exploration operations, in accordance with the *Mining Management Act*. The Mining Operations Central Mining team assesses mining management plans, and monitors, inspects and audits mining operations within Central Australia, including the Tanami and Tennant Creek regions.



Geologists surveying at Bruna Gorge.

### Northern Territory Geological Survey (NTGS)

This team is the primary source of information and knowledge on the NT's geology, as well as its mineral and petroleum resources. The NTGS team at AZRI includes geologists, a geographic information system specialist, an information centre and the Indigenous Engagement Unit. Geological samples (drill core, cuttings, rocks) from mining companies and NTGS projects are stored off site at the Core Facility, 16 Power St, Alice Springs. NTGS projects focus on attracting mineral and petroleum exploration within Central Australia by obtaining new geoscience information through geological mapping, targeted research and acquisition of regional scale geophysical datasets. All data and publications are available free of charge to industry, government and public users from the information centre, or may be accessed online via the web mapping application (STRIKE) or on the NTGS webpage.

## The Department of Environment and Natural Resources (DENR)

This department provides advice and support to enable the responsible use and development of the Territory's land and water, while conserving native flora and fauna. DENR has six divisions and four are represented at AZRI:

### The Environment Division

Works to protect the environment of the Northern Territory through the identification, management and mitigation of risks from human activities. The division

also supports the Northern Territory Environment Protection Authority.

### The Water Resources Division

The division has been set up to implement the primary piece of water resource legislation, the *Northern Territory Water Act* (the Act). The Act provides for the investigation, allocation, use, control, protection, management and administration of water resources, and for related purposes. The division is responsible for the development of Water Allocation Plans across the Northern Territory, in line with the Act.

### The Rangelands Division

The division facilitates sustainable economic development through administration of the Northern Territory Pastoral Estate, rangeland monitoring, diversification of land use through administration of native vegetation clearing on unzoned land, weed management, undertaking land suitability investigation and mapping and providing information and advice on land suitability and land management for potential agribusiness opportunities, development and alternate land use.

### The Flora and Fauna Division

The division conducts scientific assessment and monitoring of flora and fauna, manages the impact of feral animals and oversees the sustainable use of wildlife. As well as providing offices for staff, DENR has the following assets at AZRI:

- **Water Resources Drilling Depot**

The Water Resources drilling team investigate the quantity and quality of the ground water system throughout the NT. Their gear and wide range of drilling equipment is maintained at the AZRI workshop. They also have the necessary materials to set up bores and pump testing equipment.

- **Flora and Fauna compound**

This compound contains a laboratory and houses the necessary equipment to conduct field work across the NT. The compound is also a storage depot for materials used by the Parks and Wildlife Commission on remote parks.

## Department of Education

### Vocational Education and Training

The Department of Education shares facilities with DPIR at AZRI to deliver Certificate III in Agriculture; Certificate II in Rural Operations; Certificate II in Conservation and Land Management and Certificate I in AgriFood Operations courses under the Pastoral Futures Program, a joint partnership between the Central Land Council, Indigenous Land Corporation, NT Cattlemen's Association and DPIR. The curriculum is developed in consultation with industry, and students often assist AZRI staff at the farm.

## Power and Water Corporation

### Soil aquifer treatment basins

The municipal waste water of Alice Springs is treated at Ilparpa, just south of the town, and then a portion of the treated wastewater is pumped to AZRI where it fills soil aquifer treatment basins. The water purifies as it filters into an ancient channel of the Todd River, where it is stored underground before being pumped to the surface and reused.

## Department of Tourism and Culture

The department is responsible for increasing visitation to the Northern Territory; delivering and supporting the protection, conservation and management of the NT's parks and native wildlife; creating a thriving, imaginative and innovative creative economy; and encouraging lifelong involvement in sport and recreation.

### Parks, Wildlife and Heritage Division

Oversees the management of the parks, reserves, heritage assets and wildlife in Central Australia. A key role of the division is to protect and provide sustainable access to the Territory's natural and cultural estates. Its regional office is in the Tom Hare building.



*A Central Bearded Dragon (Pogona vitticeps) roaming the grounds of AZRI, photograph by Max Rittner.*

## Northern Territory Fire and Rescue Service

This service regularly carries out Compartment Fire Behaviour Training at AZRI. The purpose of the training is to ensure firefighters have the adequate skills and knowledge to safely extinguish a fire within a building or compartment. The current location at AZRI provides them with the opportunity to conduct training while minimising the disturbance to the public and the environment.

## Northern Territory Police Force

### Mounted Unit Police Horses

The history of the Mounted Police in Alice Springs dates back to 1870. Eligible horses are selected, trained and placed on patrol with police officers. The Northern Territory Mounted Police patrol the Alice Springs township and surrounding communities, and have been highly successful due to the elevation and the mobility of the police officers. They support operational duties and enhance engagement with the general public. They are housed at AZRI.



*The Northern Territory Mounted Police horses are housed at AZRI.*

# REGIONAL STAKEHOLDERS

### Wildcare Alice Springs

Wildcare Alice Springs is a not-for-profit organisation staffed by dedicated volunteers to rescue, support and rehabilitate injured and orphaned native wildlife. Wildcare uses facilities at AZRI, supervised by Parks and Wildlife. They regularly rehabilitate marsupials and birds.

### Interrentye Traditional Healing Products

Interrentye Traditional Healing Products is the commercial enterprise branch of Akeyulerre Healing Centre, which is a not-for-profit Aboriginal organisation in Central Australia. This organisation shares a building at the horticultural block at AZRI to make lip balms, cold and flu chest rubs, dry and irritated skin rubs, skin sores creams and muscle pain relief rubs, and soaps.