

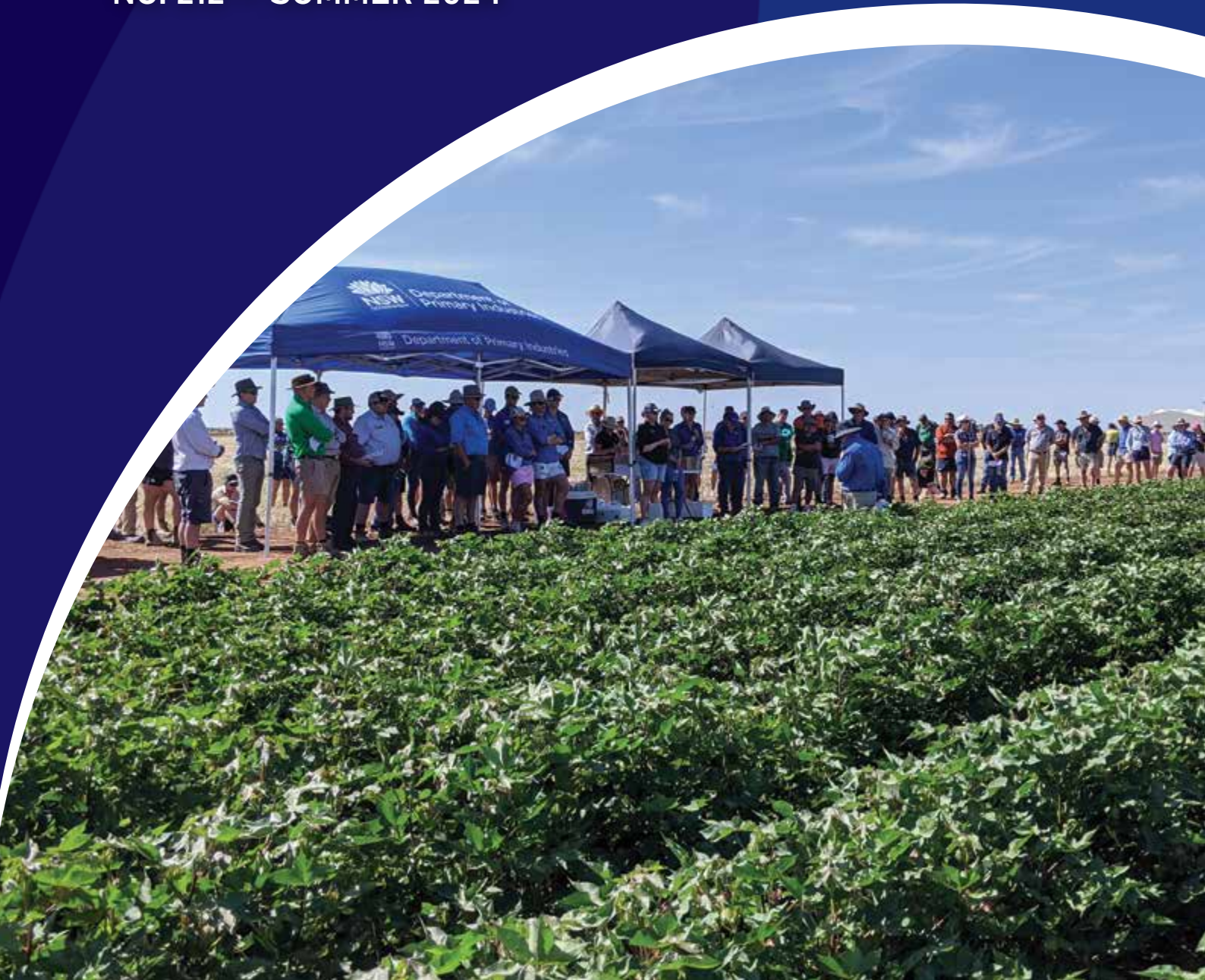


Irrigation Research &
Extension Committee

80TH ANNIVERSARY EDITION

FARMERS' NEWSLETTER

NO. 212 — SUMMER 2024



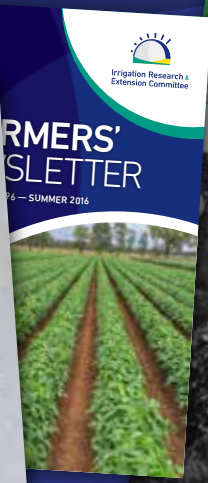
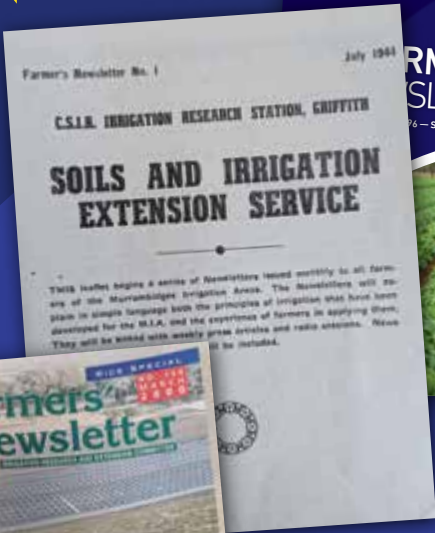
In this edition



Irrigation Research &
Extension Committee

Chair's welcome	Page 3
Shaped by the combined opinions of farmers and extension officers	Page 5
Developing an irrigation area – farm by farm	Page 9
Foundational engineering by irrigation area pioneers	Page 15
Automation for a better farm, environment and lifestyle	Page 21
Water tables – have they really gone away?	Page 27
Rice variety development	Page 35
Back to the future – rice yields over the last 50 years	Page 39
Cotton production in southern NSW	Page 45
Foundation of row cropping in the Murrumbidgee Valley	Page 51
Technology transforms thinning decisions	Page 59
A natural advantage	Page 65
The Murrumbidgee Irrigation Area and Queensland fruit fly	Page 73
A history of providing irrigators with relevant R&D	Page 79
More editors “talk to you”	Page 83
IREC Executive Committee	Page 84

First edition!



CELEBRATING 80 YEARS of the Farmers' Newsletter



IREC thanks its valued supporters



Bidgee Automation
Page 60



Cotton Seed Distributors
Page 80
www.csd.net.au



Crown Analytical Services
Page 67
www.crownanalytical.com.au



Customised Farm Management
Page 55
www.customisedfarmmanagement.com.au



Elders Insurance
Page 43
www.eldersinsurance.com.au



Irribiz
Page 63
www.irribiz.com.au



Noyce Salmon and D'Aquino Solicitors
Page 13
www.nsdlegal.com.au



Omnia
Page 19
www.omnia.com.au



Padman Stops
Page 33
www.padmanstops.com.au



PHL Surveyors
Page 25
www.phlsurveyors.com.au



Precision Agriculture
Page 57
www.precisionagriculture.com.au



Rabobank
Page 70
www.rabobank.com.au



Rubicon Water
Page 7
www.rubiconwater.com



Yenda Producers
Page 49
www.yendaprods.com.au

CHAIR'S WELCOME

Welcome to this special edition of the IREC *Farmers' Newsletter*. Eighty years of publication in the agriculture sector is an extraordinary achievement. The newsletter is also a remarkable record of the trials and tribulations of irrigated agriculture in the Murrumbidgee Valley.

Matt Toscan

IREC Chair
Irrigator, Darlington Point

SINCE 1944, the *Farmers' Newsletter* has been a trusted source of irrigation research information and inspiration. Its longevity reflects the dedication and passion of everyone involved in its production – the committees, contributors, editors, designers and advertisers. But most importantly, it is the loyal readers who have read, guided and supported the newsletter who we thank.

IREC is your irrigation research and extension committee, and we sincerely hope that over the years, irrigators have drawn benefit from the newsletter. In my 30 years for farming, I have always looked to the *Farmers' Newsletter* for information that is based on the climate and landscape of the Murrumbidgee Valley and captures the specific pressures we face as irrigators.

This anniversary year for the *Farmers' Newsletter* coincides with 100 years of irrigation research in the region. IREC congratulates past CSIRO researchers who put together the Griffith Regional Art Gallery's 2024 community art exhibition: 'The Fruits of Labour: Celebrating 100 Years of Irrigation Research and the CSIRO'. The exhibition honours the legacy of irrigation research and CSIRO in Griffith over the past century and features historical information and memorabilia. This very publication is a legacy of that history – CSIRO (then CSIR) was the first publisher of the *Farmers' Newsletter*.

This edition celebrates the commitment and cooperation of all who depend on irrigation for their livelihoods. It was the willingness of farmers, industries and scientists to work together that the Murrumbidgee Valley remains a major Australian source of food, beverages and fibre. The *Farmers' Newsletter* is a lasting product of that commitment and cooperation.

In this 80-year anniversary edition we feature articles both old and new. We invited many contributors of previous years to provide insight and reflection on recurring topics over decades of publications. I am sure you will see and read many familiar faces and names. For our younger readers, you will be introduced to some of the industry legends who have shaped much of what we do today.

This milestone for the *Farmers' Newsletter* comes at a time when I am set to welcome the next generation of my own family to irrigation farming. The newsletter has changed with the times and I hope it continues to do so, to remain a valuable and relevant resource for future irrigators. 🌅



Matt Toscan is a broadacre and horticulture irrigator at Darlington Point and Coleambally. Three generations of his family work in the business, Cavaso Farming, which produces winter and summer crops, with a focus on cotton, dried prunes and almonds.

Farmer's Newsletter No. 1

July 1944

C.S.I.R. IRRIGATION RESEARCH STATION, GRIFFITH

SOILS AND IRRIGATION EXTENSION SERVICE

THIS leaflet begins a series of Newsletters issued monthly to all farmers of the Murrumbidgee Irrigation Areas. The Newsletters will explain in simple language both the principles of irrigation that have been developed for the M.I.A. and the experience of farmers in applying them. They will be linked with weekly press articles and radio sessions. News items of interest to irrigators will be included.



We invite readers to take a journey through 80 years of a publication that is as diverse, adaptable and resilient as the irrigators and the region that have been its focus since 1944.

SHAPED BY THE COMBINED OPINIONS OF FARMERS AND EXTENSION OFFICERS

Lucy Kealey

Editor, IREC Farmers' Newsletter

To be editing the *Farmers' Newsletter* in its 80th year of publication is a privilege. The fact that it still exists is a tribute to the irrigators of the Murrumbidgee Valley and their ongoing quest for knowledge and improvement.

THE very first edition of the *Farmers' Newsletter* was an 8-page leaflet with an ambition to be issued monthly. Though the format, frequency and platforms have changed over 80 years, the unwavering purpose of the publication has been to provide irrigators with the results of research and lessons learned from farmer experience to improve their irrigation businesses.

The newsletter was first published by the newly established advisory service, the Soils and Irrigation Extension Service. The service was located at the Griffith Irrigation Research Station of the Council for Scientific and Industrial Research (CSIR) – an Australian Government council which became the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in 1949. The officer in charge of the new service, RR Pennefather, wrote in the first edition of the *Farmers' Newsletter* that the service was established on the belief that "by linking the facts disclosed by research with the hard-won experience of the settler we can together beat the salt menace, but to do it in time will require the all-out efforts of every organisation concerned with the wellbeing of MIA agriculture."

The MIA Agricultural Service of the NSW Department of Agriculture took over publishing the newsletter in 1951, and the Large Area and Horticulture versions were introduced.

The Irrigation and Extension Committee formed in 1939 but it took until 1947 for the organisation to be representing all irrigation stakeholders – an executive committee of growers' organisations and the government bodies of the Water Conservation and Irrigation Commission, the Department of Agriculture, and CSIR.

In 1956, IREC started publishing the *Farmers' Newsletter* with the editor describing the newsletter as "a pioneer in the field of extension writing" and recounting that "the people whom it is designed to serve have said what they wanted, how they wanted it and have helped at every stage to guide the editorial finger."



In the media-abundant world of 2024, we hope you find some time to read this special edition of the *Farmers' Newsletter* and enjoy seeing how much has changed and how little has changed since 1944.

*Lucy Kealey began her long association with the Riverina at CSIRO in Griffith, working with Liz Humphreys and Warren Muirhead. After a short stint in research and a longer stint in the fertiliser industry, she embarked on a career of agricultural communications and publications. Lucy has edited the *Farmers' Newsletter* since the year 2000.*

“

I have been a contributing author to the *Farmers' Newsletter* since 1997 but on becoming the Executive Officer of IREC in 2014, one of my main responsibilities was to oversee the continued publishing of IREC's flagship publication.

I am very proud to play a small part in the more than 400 editions published in the 80 years of the newsletter – especially as many other publications have fallen by the wayside. The *Farmers' Newsletter* has not only provided vital information for growers and industry, but it has also been a key vehicle for industry and researchers to get their message to farmers.

The newsletter has evolved over time and went fully digital in 2016. I am pleased to say, IREC now has scanned copies of the newsletters in the members section of the IREC website going back to 1960, and there are plans to digitise the remainder.

I would like to thank the many people who have contributed articles over the years and the advertisers who have continued to support the newsletter – this milestone has been made possible because of you.

To our readers, I hope you enjoy this special printed edition of the 80th anniversary edition of the *Farmers' Newsletter*. I look forward to celebrating its 100th birthday!

Iva Quarisa OAM

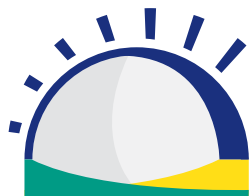
Executive Officer, IREC

”

Connecting with the latest irrigation info

In 1944, the *Farmers' Newsletter* linked with weekly press articles and radio sessions.

In 2024, the options are a little different.
Keep in touch with IREC and the latest in irrigation research via:



Irrigation Research & Extension Committee



www.irec.org.au



www.facebook.com/irecnsw



x.com/@IRECNSW



irec.org.au/irec-podcasts



au.linkedin.com/company/irrigation-research-and-extension-committee

SECURE FUNDING FOR ON-FARM UPGRADES!

Two funding programs are open for on-farm irrigation systems: the **Australian Government's On Farm Connectivity Program** & **NSW Farms of the Future Program**.



Reduce manual irrigation labour



Achieve application efficiencies of 85%+



Data to drive irrigation decisions

TRANSFORM YOUR SURFACE IRRIGATION MANAGEMENT

FarmConnect is Rubicon Water's all-in-one irrigation automation solution designed to enable High Performance Surface Irrigation. Transform manual practices by installing robust automated drives onto existing gates, with integrated water level sensors that measure in-field water height for precise and efficient use of water.

"We're excited for irrigators to utilise available funding opportunities to become more productive and continue building as one of the world's most efficient agricultural regions," - Peter O'Donnell, Commercial Operations Manager - RUBICON WATER



Scan for details about the Australian Government's On Farm Connectivity Program.



Scan for details about the NSW Government's Farms of the Future program.

Contact: Peter O'Donnell,
Commercial Operations Manager
peter.odonnell@rubiconwater.com



farmconnect.com | (03) 5820 8800



Irrigation Research and Extension Committee

BA
MCC

Farmers' Newsletter

Private Mail Bag C.S.I.R.O. Division of Irrigation Research,
Griffith, 2680 N.S.W., Australia
Phone: Griffith 621700 (six lines)

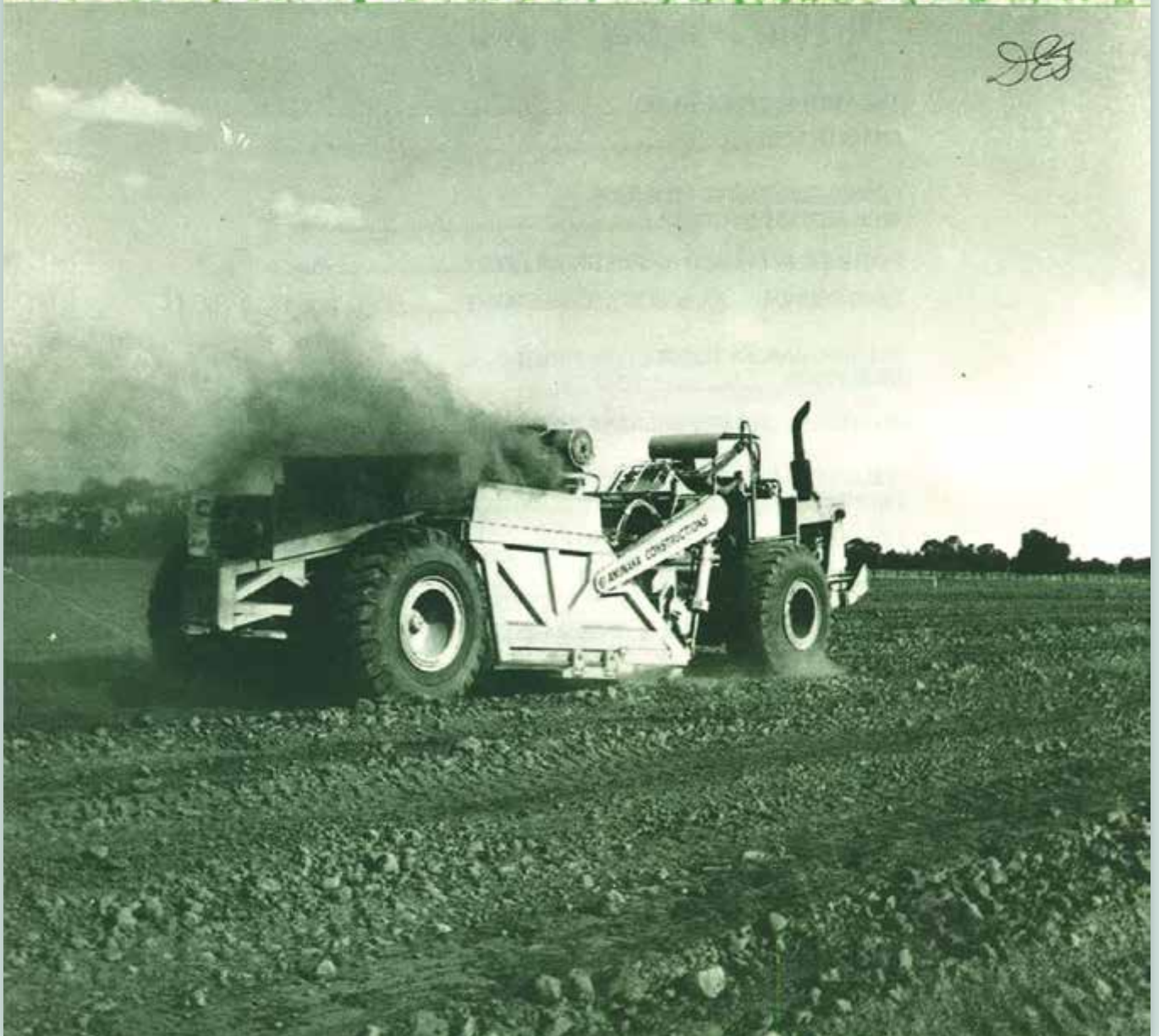
Registered at G.P.O., Sydney, for transmission by post as a periodical.

LARGE AREA — NO. 78

PRICE 20c

APRIL, 1971

JES



Water availability, management and efficiency have driven farm development in the Murrumbidgee Irrigation Area. Advances in landforming technology and irrigation layout design have underpinned the success and progress.

DEVELOPING AN IRRIGATION AREA – FARM BY FARM

Gary Polkinghorne

Director, PHL Surveyors

From the earliest days of the Murrumbidgee Irrigation Area it was evident that uniformity of the flood irrigated field surface would be a major factor in irrigation efficiency and crop productivity.

THE Murrumbidgee Irrigation Trust was established in 1912 to oversee the construction of extensive irrigation infrastructure, including channels and drains, which allowed for the systematic distribution of water to the new Murrumbidgee Irrigation Area and to each farm.

At the same time, landholders also needed to develop on-farm irrigation infrastructure. In the early 20th century, flood and furrow irrigation systems were established to enable farmers to cultivate a wider variety of crops including cereals, fruit and vegetables.

Landplaning

In 1945 an article in *Farmers' Newsletter* No.5, written by RR Pennefather (In-Charge, Soils and Irrigation Extension Service) outlined the importance of "smoothing and grading" in improving crop productivity. Farm machinery technology at that time had developed to various types of landplanes, and the earthmoving practice was termed "landplaning". Landplaning in its basic sense involved leveling the soil surface to create a smooth, even field. The landplane was used to shave off high spots and fill low spots to create a more even surface, thus facilitating a more uniform distribution of water across the field.

Landplaning was a huge step forward at that time and enabled more efficient use of irrigation water. However, these systems could not move significant volumes of earth to enable changes in the field topography that would permit even greater improvements in irrigation efficiency.

Scraping

The introduction of 'self-loading scrapers' into the earthmoving landscape in the late 1960s and early 1970s was the first revolution in landforming for flood irrigation in the MIA. The self-loading scrapers enabled large quantities of material to be moved many hundreds of metres around a field to effectively alter its topography, thus further improving water flow and distribution.

The benefits and costs of 'scraping' were discussed during the 1970s by Bill Booth 'Landforming – An Agronomic Viewpoint' (*Farmers' Newsletter*, Large Area No. 78, April 1971) and again by Roger Clough in 'Improving Irrigation Standards' (*Farmers' Newsletter*, Large Area No. 89, January 1974). Both articles discussed in detail the many advantages to be gained by undertaking scraping of fields to improve overall irrigation efficiency and farm profitability.

In these earliest days of scrapers, laser technology had not been introduced into landforming and the cut and fill within fields was monitored manually. This required a grid level survey to be undertaken over the entire field, with stakes placed at a 30 metre grid spacing. A design for the landforming was completed by an irrigation surveyor and electrical tape was placed on every stake to signify the cut or fill at that point. Once the field was scraped, multiple passes with a landplane were required to smooth off the landformed surface.

The major step forward with this technology was being able to create fields with square boundaries, and bays within fields with straight banks (either contour or border-check). The size of the bays was also considerably larger due to the more uniform nature of the field topography. Prior to scraping, a typical field would consist of bays around 1–2 hectares in size. After scraping, the typical bay sizes would be in the order of 4–6 hectares, thus providing multiple efficiencies for the entire farming operation.



Laser technology enabled significant improvement in the efficiency of soil movement during the landforming operation.

Laser landforming

The next leap in technology was the introduction of 'laser buckets'. Similar to scrapers, laser buckets were able to transport large quantities of material within and between fields to greatly change the topography of a farming layout.

The introduction of laser technology provided improvements in the efficiency of moving material, and also reduced the initial survey cost, as the pegs at the 30 metre grid interval were no longer required. The use of laser technology did not have a major effect on overall farm layout designs, however the greater accuracy of the earthmoving allowed the development of larger bay sizes, provided that the water supply rate was sufficiently high. As bay sizes increased, the use of 'bankless channels' to aid in quicker bay drainage times also gained popularity.

The benefits of larger bay sizes in growing rice were discussed in particular by Donald Naunton 'Landforming for Rice Production' (*Farmers' Newsletter*, Large Area No. 117, April 1981).

GNSS guidance systems

The introduction of global navigation satellite system (GNSS) technology and precision agriculture systems has allowed farm landforming to literally leap into the space age. Farm surveys are now undertaken by vehicle mounted GNSS systems and in some cases drones, and the designs are supplied to the landforming contractor in a variety of digital 3D formats.

The ability to create digital 3D models has meant there is virtually no constraint on the number or type of personalised features that can be included in any farm design. Contour bays with features such as 'down the grade fall', 'continuous cross-fall' and 'hinge points at bankless channels' are now in common use. Border-check or row-cropping fields can also be designed with zero grades at the top of a bay to initiate efficient irrigation. Individual bay sizes of up to 20 hectares are now in use and appear to be restricted primarily by the available water application rates.

These 3D models also enable the design of minimal landforming layouts for permanent horticulture crops that cause minimal damage to soil structure, but ensure efficient drainage from the orchards.

Keeping pace with technology

The evolution of landforming in the MIA has mirrored the development of technology in the farming sector. This, combined with the dynamic and entrepreneurial nature of the local farming community and the businesses supplying them, has meant that the landforming industry has always been at the cutting edge of technological advancements. 🌞

Gary Polkinghorne is a Griffith-based surveyor. After a stint in the UK in the 1990s he returned to the family business – then Polkinghorne, Budd and Longhurst – and has worked with irrigators across southern Australia to develop world class irrigation layouts.

C.S.I.R. IRRIGATION RESEARCH STATION, GRIFFITH

SOILS AND IRRIGATION EXTENSION SERVICE

SPECIFICATIONS FOR IRRIGATION FACILITIES

FARM DITCHES, SURFACE DRAINS, GRADING

(By R. R. PENNEFATHER, In-Charge, S.I.E.S.)

ON the M.I.A. the life of an irrigation farm depends mainly on the control obtained over the application of water. This control requires a reasonably steady supply of water through the Dethridge wheel, adequate supply ditches, equipped with easily regulated checks and outlets, well graded land with adequate furrows or check banks, and good surface drainage to handle any surplus water from irrigation or rain.

For certain crops and on lighter soil, almost constant personal attention is required during watering. A steadily growing number of farmers have demonstrated that it is practicable to meet these conditions, that with them irrigation becomes a much easier job and that it pays handsomely in the form of permanent soil fertility and long-lived high yielding trees.

It is obvious, however, that on many farms one or more of these requirements for controlled irrigation is lacking. This is most obvious with grading, and earth ditches on flatter country.

On some farms these have never been satisfactory, and in many others grading and the carrying capacity of ditches have declined over the last twenty years. In most cases a major reconstruction job is necessary, and it is usually convenient to combine this with some smoothing or grading.

This subject has been discussed by Extension Groups. It has been made clear that attempts at grading and ditch reconstruction have not always been successful. Reliable specifications for these jobs are required, including the control of paspalum in ditches and the use of Pool or contract machinery, especially during the present period of labour shortage.

Following on the information supplied by Extension Groups, the Soils and Irrigation Extension Service has given detailed attention to the subjects of ditches, ditch structures, paspalum control, pipelines, surface drainage and smoothing and grading. It has called on the experience of many settlers and used the best available information from engineering practice and research.

As a result Mr L. F. Myers has drawn up specifications covering all these aspects as a basis for discussion by Extension Groups, the M.I.A. Machin-

“

My thanks and congratulations to the *Farmers' Newsletter* for 80 years of service.

This region's irrigated farming has been continually changing over the 60 years since I became involved with the IREC, when Roy Sainty was in the Chair.

The main irrigated crop was rice, oats and wheat in a rotation with clover and ryegrass winter pastures and paspalum and white clover summer pastures. All farms were fenced, and most had sheep and cattle yards and a small wool shed.

A subcommittee of IREC was formed to guide research in new crops. Low wheat prices led to wheat quotas, which resulted in the introduction of additional summer grain crops: initially grain sorghum then maize, sunflower and soybeans, and experimenting with the Empire cotton variety, which failed.

The IREC had a very wide range of problems to find answers to and an equally big task in getting those research results out to farmers. The newsletter has been outstanding in the Committee's vital "extension" role.

On behalf of all the farmers who have benefited, many thanks to the editors, contributors and the IREC.

Bruce Gowrie-Smith OAM

Irrigator, Darlington Point
Formation Chair of the IREC Grain Crop Committee

”

“

Before I arrived in Griffith as the District Agronomist in 1980, I had been told about the innovative organisation called the Irrigation Research and Extension Committee. It didn't take long to experience the important and unique role the organisation played in agricultural research and extension.

Having a broad-based community-driven organisation feeding local priorities into our research and extension programs made them much more relevant and focused on the needs of irrigated agriculture.

The IREC Winter and Summer Crop Subcommittees and the Rice R&D Subcommittee helped me and other agronomists plan and run many pre-season meetings, farm walks and field days that provided the latest and best technology to help farmers improve yields, water use efficiency and farm profitability. Further, they helped identify gaps in our knowledge that required R&D solutions.

IREC played an incredibly important role in R&D for the rice industry. The organisation ran the Rice R&D program from its inception up until a statutory based program commenced in 1992–93.

The IREC *Farmers' Newsletter* played a pivotal role in the effectiveness of the IREC committees and the Rice R&D program – extending best management practices and the results of research to farmers and the agribusiness community.

IREC can be extremely proud of the services it has provided from inception to the present time. Best wishes for the future.

Mike Hedditch

District Agronomist Griffith 1980–1986
Executive Director RGA and Secretary of IREC 1986–1999
General Manager Grower Services, SunRice 1999–2016

”



NOYCE SALMON & D'AQUINO

SOLICITORS & CONVEYANCERS

LEGAL ADVICE YOU CAN COUNT ON

PROUDLY SERVICING THE MURRUMBIDGEE AND COLEAMBALLY IRRIGATION AREAS FOR 70 YEARS, NOYCE SALMON & D'AQUINO, SOLICITORS AND CONVEYANCERS, ARE WELL VERSED IN THE UNIQUE LEGAL NEEDS OF FARMING CLIENTS.

Partners

Vicki Wade

Nick Wordsworth

James Walsh

Senior Solicitor

Tony Del Gigante

Licensed Conveyancer

Melissa Curry

OUR EXPERT STAFF
PROVIDE EXCEPTIONAL
ADVICE AND SERVICES IN:

- WILLS AND ESTATES
- SUCCESSION PLANNING
- LEASES AND SHARE FARMING
- COMMERCIAL DISPUTES
- LAND AND WATER CONVEYANCING



**CONTACT
US TODAY**

WEBSITE: WWW.NSDLEGAL.COM.AU

EMAIL: NSD@NSDLEGAL.COM.AU

PHONE: (02) 6969 0000

FARMERS' NEWSLETTER

Irrigation Research & Extension Committee

Private Mail Bag, C.S.I.R.O. Research Station
Griffith, 5 S., N.S.W, Australia

Phones : Hanwood 7, 16, 124, 126

Registered at G.P.O. Sydney, for transmission by post as a periodical

No. 58

Price 1/6

July, 1957



Underpinning the productivity of horticulture in the Murrumbidgee Valley were miles and miles of tile drains. Irrigation industry stalwart, Clive Polkinghorne, reflects on this massive engineering undertaking.

FOUNDATIONAL ENGINEERING BY IRRIGATION AREA PIONEERS

Clive Polkinghorne

Surveyor

IREC Lifetime Achievement Award recipient 2007

Prior to the extremely wet year of 1956, all the survey work and calculations for installation of drains in the Mirrool No.1 Irrigation Area were performed by officers from the Water Conservation and Irrigation Commission (WC&IC) in Griffith.

AFTER the floods, these officers realised they were not able to cope with the extra drainage work, and they approached Mr George Faulks from the local Griffith surveying firm of Faulks and Hunt to take over. I started with this firm in January 1955, as an Articled Pupil Surveyor to John James Hunt, as at that time there was no university degree course, and so began my long association with tile drainage.

Mr. Maurice Stephenson was secretary of the MIA Tile Drain Committee at that time, and it was his task to organise installations, including liaising with farmers and the WC&IC design branch, helping farmers locate the design on their farm, and engaging trenching contractors, surveyors and pipe carriers.

There were a number of tile laying machines operating in the late 1950s, including a locally made machine by Fletcher, and others by Collier and Stockton, and Frank Toscan. Frank also had an excavator with a long reach, which was used to install the main pump sump for each system. These sumps were 14 feet (4.27 metres) deep with one length of fibro pipe (the tail pipe) at 8 feet 6 inches (2.5 metres) deep, from which the trenching machines started laying pipes.

An inspection pit had to be placed at the intersection of each lateral line with the main line, and also at a distance of not more than 10 chains (about 200 metres) apart on laterals so the cleaning device ("snake"), which could be extended to 100 metres length, could clean the whole length from both ends. I remember Julio Toscan as the contractor who installed hundreds of these inspection pits.

Tile drains continued to be installed throughout my working life. There was a resurgence as rice farms were developed for horticulture in the 1990s and new tile drains went down in those large vineyards.

Tile drainage systems have been essential in maintaining the viability of horticultural farms in the MIA but with the advent of more efficient irrigation systems, some have become neglected or abandoned. I encourage all farmers with a tile drainage system to schedule regular maintenance, as another very wet system will surely come. 🌤️

Clive Polkinghorne is a pivotal part of the region's surveying history. He believes the practice he joined in the 1950s was started by Reg Harnett in the 1920s. Clive became a partner with George Faulks after graduating, and several partners and many surveyors have been involved in the practice since that time. The practice now operates as PHL Surveyors.



A Barber Greene trenching machine in operation. The 300 mm long and 100 mm diameter agricultural pipes (tiles) are laid out beside the tightly strained depth guide wire, just visible beside the track of the machine. The machine was able to cut a trench to a maximum depth of 2.5 metres.



A workman is handing tiles on a "L" shaped pole to another man who is in the bottom of the trench, on a small seat attached to the machine (see picture below).



The worker in the trench laid the pipes tightly together, covered the join with a strip of tar paper and placed loose soil over the paper to hold it in place. The trench was then continually refilled with excavated soil by a locally custom-made "backfilling machine" being towed by the trencher.

TILE DRAINAGE REACHES

100 M.I.A. Farms

Rate of progress on tile draining was reported to M.I.A.

District Council of Extension Groups' annual meeting,

when it was stated that a total of 85 farms had been

completed and 35 more were on the way.

Making this report, Mr. Morris M. Stephenson, who is secretary of the Council and M.I.A. Tile Drain Committee, said 74 farms had been completed in Mirrool and 11 in Yanco.

Total area drained amounted to 1718 acres with 87 miles of tile lines installed.

Farmers had paid a total of £100,225 for the installations with average cost per acre drained before May, 1956, amounting to £60 an acre, while the average for those drained in the past year was £58 an acre.

He explained that the drop had been brought about by draining being undertaken of wider spaced farms—tile lines ranged from 25 rows to 4 rows apart and this explained big fluctuations in costs per acre from one farm to another.

Since he had reported to the District Council in May last year 32 more farms had been completed in Mirrool and none in Yanco. The 763 acres involved had 3143 chains of tile lines.

TILE SUPPLY AFFECTED

At present tile drain digging machines were in action on five farms, while 10 more farms had external works and all preliminaries completed with a further 20 farms with all preliminaries completed and now awaiting external works.

Installations had been planned on 24 more farms now making financial arrangements while seven additional farms had been planned and the plans were awaiting the farmers' approval.

A total of 47 further farms had been recommended for tile drainage and were awaiting the drawing of plans, 27 were being investigated for recommendation, 16 more had to be deferred because watertables were unsuitable for investigation and 23 farms had made application and were awaiting investigation.

Mr. Stephenson added that on 16 other farms investigations had been made and the farm had either been not recommended for tile drainage or deferred at the farmers' request.

"This makes up a total of 280 applications dealt with by the committee," Mr. Stephenson pointed out.

He went on to refer to the tile supply position and reported that the wet winter had so adversely affected the supply of tiles from Wentworth that it became necessary to seek other sources of supply.

NO FARMER SUFFERED

It had been necessary to bring tiles from places as far away as Cessnock and as a result the price of tiles rose considerably late last year and early this year.

Tiles were landed on the M.I.A. as expensively as £87 per thousand.

Many sources of supply were used and an average price of £81 per thousand was charged and all collections and payments were made through a "tile pool."

The slump in building had influenced many brickworks to turn to tile

16

considerably as a result in the
reduce the pool price to £76
d on tiles purchased at £81.
y the terrific cost the rise

until local production com-
price was anticipated to be

rs had not deferred instal-
the possibility of machines
result of continuous work

IONS

s were down to 6 to 12 feet
suspend investigations be-

made from Yanco for tile
presently working on an in-
regular visits to Leeton.

given attention to various
them could be two-thirds
alternatives would be care-

into mole drains, the com-
oro-pipe and would be in-
at shallower depths. None
ded.

them with gravel or rice
ential of concrete tiles tho'
t.

WORRY

he summed up, "but at pre-
evidence to support some-
ain forms of installations."
n that there had not been
drainage.

Mr. P. Crook (Hanwood) agreed and commented it was a pity to lose present opportunities for research to check changes brought about by the system.

Mr. W. Raphael (Hanwood) said that leaching minerals could create a problem—there could be a need for a whole new system of management and agronomic studies were necessary to help guide the farmer.

It was resolved to reaffirm to I.R.E.C. the District Council's view of the urgent need for the studies with particular reference to leaching with Mr. Crook and Mr. Francis Polkinghorne leading the resolution.

It was also decided to ask the secretary to secure published information on the subject from Victoria.

General satisfaction was expressed with the tile pool arrangements as profits had gone back to growers.

It was also unanimously stated that the chainage charges left little to spare from the running expenses—1000 miles a month—time and office administration.

The Council president (Mr. Roy Sainty) said it was felt by people who knew that the chainage rate was a cheap one and if farmers had to undertake for themselves work now being done by Mr. Stephenson the cost and time would be much greater.

17

“

The *Farmers' Newsletter* was always very important to me as a research scientist with CSIRO. The evidence is in the 27 papers I authored or co-authored over that period, from losses of nitrogen from urea applied to drill sown rice to the Happy Seeder for sowing wheat into rice residues.

The *Farmers' Newsletter* offered the only permanent and readily accessible record of the results of research relevant to farmers and extension agents in the region. Furthermore, results could be presented relatively quickly, soon after experiments were completed.

Just as important as sharing the results of my research, it was a great way to keep up to date with the findings and recommendations on a wide range of local research, extension and industry topics.

I commend the IREC (and most importantly the farmers and others behind it) for their vision and commitment to maintaining the publication of the *Farmers' Newsletter* over the past 80 years, for moving with the times to make it increasingly user-friendly and attractive as publication technology continues to advance, and for finding the means to maintain its viability.

Dr Liz Humphreys

Research Scientist, CSIRO Griffith 1982–2006

Irrigated cropping systems water scientist, IRRI 2006–2015

”

“

What an incredible anniversary! I looked at my CV to see that I published in *Farmers' Newsletter* several times, beginning in 1971. I authored and co-authored articles across a range of topics focused on water quality for irrigation and impacts on aquatic ecology as a result of weed management and drainage recycling practices.

The *Farmers' Newsletter* was an easy way to connect with farmers, both to provide information and to learn about their priorities. More acknowledgement for articles in industry publications ought to have been made, rather than citation in journal publications that was the priority for CSIRO.

Congratulations to IREC on 80 years of publishing the *Farmers' Newsletter*.

Dr Kath Bowmer

Research Scientist, CSIRO Griffith 1970–1996

Professor, Charles Sturt University 1996–2018

”

Omnia's Bio-enhanced Foliar Range

Optimise growth, boll retention and yields

- Biostimulants with high P and added traces
- Improves vigour and yield
- Improves stress management
- Improves fruit retention
- Independant trials show upwards of 20% yield increases

✓ Mega-Kel-P®

✓ OmniPULSE

✓ OmniBoost®-K



Congratulations to IREC celebrating 80 years of the Farmers' Newsletter.

omnia.com.au | 03 5133 9118



omnia
NUTRIOLOGY



Innovation is key to success. Over 80 years, the *Farmers' Newsletter* has covered the development, adoption and adaptation of irrigation technology for farm businesses to be more profitable and sustainable.

AUTOMATION FOR A BETTER FARM, ENVIRONMENT AND LIFESTYLE

Rob Houghton
Irrigator, Gogeldrie

Automation of surface irrigation systems has certainly come a long way since the first technologies introduced in the 1980s and 1990s.

IN 1992, NSW Agriculture Special Engineer (Irrigation), Hugh Campbell, informed readers of *Farmers' Newsletter*, Large Area No. 140 that automatic control for flood irrigation varied "from simple detectors that emit visual or audible warnings telling the farmer it is time to check his water and change bays, to a system that opens and closes one bay outlet, to very sophisticated systems that can sequentially control opening and closing of successive bays along a channel."

The benefits of automation in the 1990s remain valid now, including reducing "wear and tear on your farm motorbike!"

Hugh Campbell's article finished with a call for innovative farmers to participate in trials to help NSW Agriculture consolidate knowledge needed for the agency to actively promote automation to all irrigators.

Fast forward 30 years, and the Irrigation Research and Extension Committee (IREC) is at the forefront of trialling, implementing, and showcasing commercial automated irrigation systems.

Since 2018, IREC's research block at Whitton (the IREC Field Station) has been operating automated irrigation systems at a commercial scale. Initially utilising Rubicon's 'Farm Connect' system on a bankless channel layout, the site now also demonstrates the benefits of automation using systems from Padman and Bidgee Automation, all in one location.

Irrigation layouts

Transitioning from traditional siphon systems to a pipe-through-the-bank or bankless channel layout is one of the most cost-effective ways to implement automation and achieve high-flow irrigation efficiency. The IREC Field Station demonstrates this with two advanced surface irrigation layouts:

- pipe-through-the-bank pontoon with an engineered slope
- flat layout bankless channel.

Why automate?

There are clear benefits of automation, starting with those promoted by Hugh Campbell in 1992:

- less time spent chasing water and being more productive with that extra time
- a full night's sleep while irrigating
- reduced water wastage from excess drainage at the end of your bays
- reduced groundwater accessions and consequent rise in water tables
- reduced wear and tear on your farm bike/ute.

In addition to these advantages, I have found that automated irrigation has:

- eliminated the need of rotor buck area and siphons
- reduced irrigation event times
- improved time efficiency
- enabled remote surveillance of irrigation
- enabled better feedback to irrigation team, e.g. channel heights, pump status
- made flood mitigation possible from your phone.

Changes to the farming system

Phasing out siphon-based irrigation has streamlined machinery flow at the supply end of the field, allowing for the use of wider machinery without the complications of working down rotor bucks and moving siphons.

Reducing the time of an irrigation event duration offers immediate benefits to crop production outcomes. Simply put, the crop receives water without suffering from waterlogging or extensive drying. The bay can be shifted to the next stage at precisely the right time, meeting the plant's needs. With automation, this typically happens without human intervention – even while you're asleep.

Since implementing a fully automated system on my own farm in 2018, I can count on one hand the number of times irrigation events have disrupted my sleep, which not only has a huge advantage to my own productivity but also to my quality of life.

I think William Barnhill said it perfectly in a case study for Murrumbidgee Irrigation in 2022:

“Automation is the greatest innovation. I can sit on a beach miles away and check the water at the outlet, stop or vary it with 6 hours' notice. In the old days you had to beat the water bailiff to the MI mailbox with a handwritten note by 7 am!”

Key features of automation

Automation is a critical component of high-flow surface irrigation systems, offering the following key features:

Scheduling

Irrigation events can be scheduled days in advance, with changes made as needed based on real-time conditions. Automation can be triggered either by the bay water height reaching a specified level or by a preset time. Bay sensors can be installed in the field or at the entry to the next bay, ensuring precise control.

Remote management

Automated systems allow operators to monitor essential data such as channel, drain and field water levels, as well as pump status without leaving home. This is particularly valuable in poor weather, when you're off farm, or when you need to start a pump remotely. The ability to manage supply systems and make paddock changes without needing an on-site operator eliminates the need to manually fill supply channels and start siphons during the night, which is a time-consuming task. Having confidence in the technology frees up time and mental space to focus on the strategic aspects of your operation.

Keeping abreast of new technology

Irrigation is one of the key factors that sets Australian agriculture apart, allowing us to contribute to a significant share of the country's production of high-quality food and fibre from some of the most productive soils in the country. The ability to enhance crop outcomes through advanced systems like automation keeps us at the forefront of irrigation efficiency today.

While today's advances are impressive, tomorrow will undoubtedly bring new innovations and as always, IREC will be leading the way in exploring the next big thing.

A special thanks to the key supporters of the IREC automated irrigation project, including Mike Naylor Surveying, Greg Geltch Excavation, Rubicon, Padman Automation, Bidgee Automation and Murrumbidgee Irrigation. Without their in-kind support, this project would not have been possible.

Congratulations to IREC and the *Farmers' Newsletter* on your continued success over 80 years in providing valuable insights into irrigation research and farmer innovation. 🌞

Rob Houghton was Chair of IREC from 2013 to 2022. He also took on the role of Station Manager during the redevelopment of the IREC Field Station at Whitton. Rob has represented irrigators at many forums including 15 years on the RGA Central Executive and two terms as Chair of the National Program for Sustainable Irrigation.

Automatic irrigation

Hugh Campbell, Special Engineer (Irrigation), NSW Agriculture, Yanco

Automatic control of irrigation is well advanced in horticultural crops and domestic parks and gardens. Sophisticated electronics, radio links and computers are available to make water application to plants very efficient. Water, labour and nutrient use are coupled in highly efficient systems.

AUTOMATIC FLOOD IRRIGATION

Automatic control in flood irrigation has been around in various forms for some time.

Control is usually achieved by first measuring time, water volume, the presence of water some distance down a bay or some combination of all three.

The degree of automation also varies from simple detectors that emit visual or audible warnings telling the farmer it is time to check his water and change bays, to a system that opens and closes one bay outlet, to very sophisticated systems that can sequentially control opening and closing of successive bays along a channel.

Once the time, volume or distance is measured then the information is communicated to an activation device. Communication can be by direct mechanical, electrical, pneumatic or hydraulic connection, through an electric fence wire or by radio. Infrared connection may be possible in the future.

Trigger or activation devices include electric linear actuators (which look and work like a small hydraulic ram), the farmer via a pocket pager or an optical or audible alarm, relay

switches, latches, diaphragms or floats.

Automatic bay watering is the key to more efficient irrigation farming. With automation you can:

- i) spend less time chasing water and be more productive with the extra time gained doing all the other jobs that you never seem to get time to do
- ii) get a full night's sleep while irrigating
- iii) reduce water wastage from excess drainage at the end of your bays
- iv) reduce groundwater accessions and consequent rise in watertables
- v) reduce wear and tear on your farm motorbike

For some time now advisers have been advocating higher flow rates during irrigation to reduce the deep drainage but your problem has always been how to manage the faster rates of watering. Now, with automation, you can water bay by bay with high flows rather than opening three of four bays for a slow overnight watering.

MORE KNOWLEDGE NEEDED

At present NSW Agriculture does not have the knowledge we need to actively promote automation to all

flood irrigators. We know about some of the systems that are currently available. However, we would also like to know about systems that have been developed by farmers for their own use and what trials, tribulations and successes have been experienced.

If you can help we would like to hear from you. Officers of the NSW Agriculture Irrigation Management Service would like to know how you are coping with automation of you flood irrigation. If possible can you please jot down what you have tried, how successful you have been, what it cost and the benefits you think you have obtained from automation.

We suspect that automation may work hand in hand with laser landforming on difficult country to significantly reduce landforming costs.

To help us gain more information we are also looking for some farmers who are interested in trialing some automation. Under the Salt Action incentive scheme we would like to assist you to automate your summer pasture irrigation system in return for obtaining useful information on the benefits and problems. A grant of up to \$3,000 may be available (on a dollar for dollar basis) to suitable applicants in the 1993/94 program.

If you have been contemplating automation now is your chance to have a go, with some help from us. Please get in touch if you want to take advantage of this incentive next year.

An automatic pneumatic gravity bay outlet. Manufactured by Precision Irrigation, Strathmerton, Vic.



PAI



“

As I enter my 50th year of irrigation farming it is interesting to reflect that the *Farmers' Newsletter* has been a valuable resource for me for all of that journey. It had already been established for 30 years before I began my career in agriculture. Eighty years of publishing is an incredible milestone and is testament to the resilience, dedication and commitment by the agricultural community in keeping the *Farmers' Newsletter* relevant during a period of incredible change. I still have all my hard copies from my early beginnings. They have always been a great point of reference and especially valuable to me when trying something new such as popcorn in the 1990s. It was a one-stop shop before the internet but continues to provide great knowledge and insights.

For eight decades the *Farmers' Newsletter* has been a vital resource, sharing wisdom, innovations, research and stories from the field that has helped countless farmers grow adapt and thrive.

I congratulate all the staff who have worked behind the scenes and especially Lucy Kealey for her skill as editor. I wish the *Farmers' Newsletter* many more years of success, growth and continued service to the critical irrigation community who provide for our nation and the world.

Peter Draper

Irrigator, Leeton

IREC Chairman 1999–2009

”

“

Coleambally Irrigation congratulates IREC on reaching the impressive milestone of 80 years of publishing the *Farmers' Newsletter*.

This remarkable achievement reflects IREC's longstanding commitment to supporting the irrigation farming community in the Coleambally region and beyond, and sharing valuable research outcomes and information with farmers. The newsletter's rich history, bolstered by its strong membership, high reader engagement and industry support, underscores its role as a trusted and essential resource for irrigators.

We are proud to stand alongside IREC in supporting irrigators and their communities and we look forward to many more years of successful collaboration!

Coleambally Irrigation

”



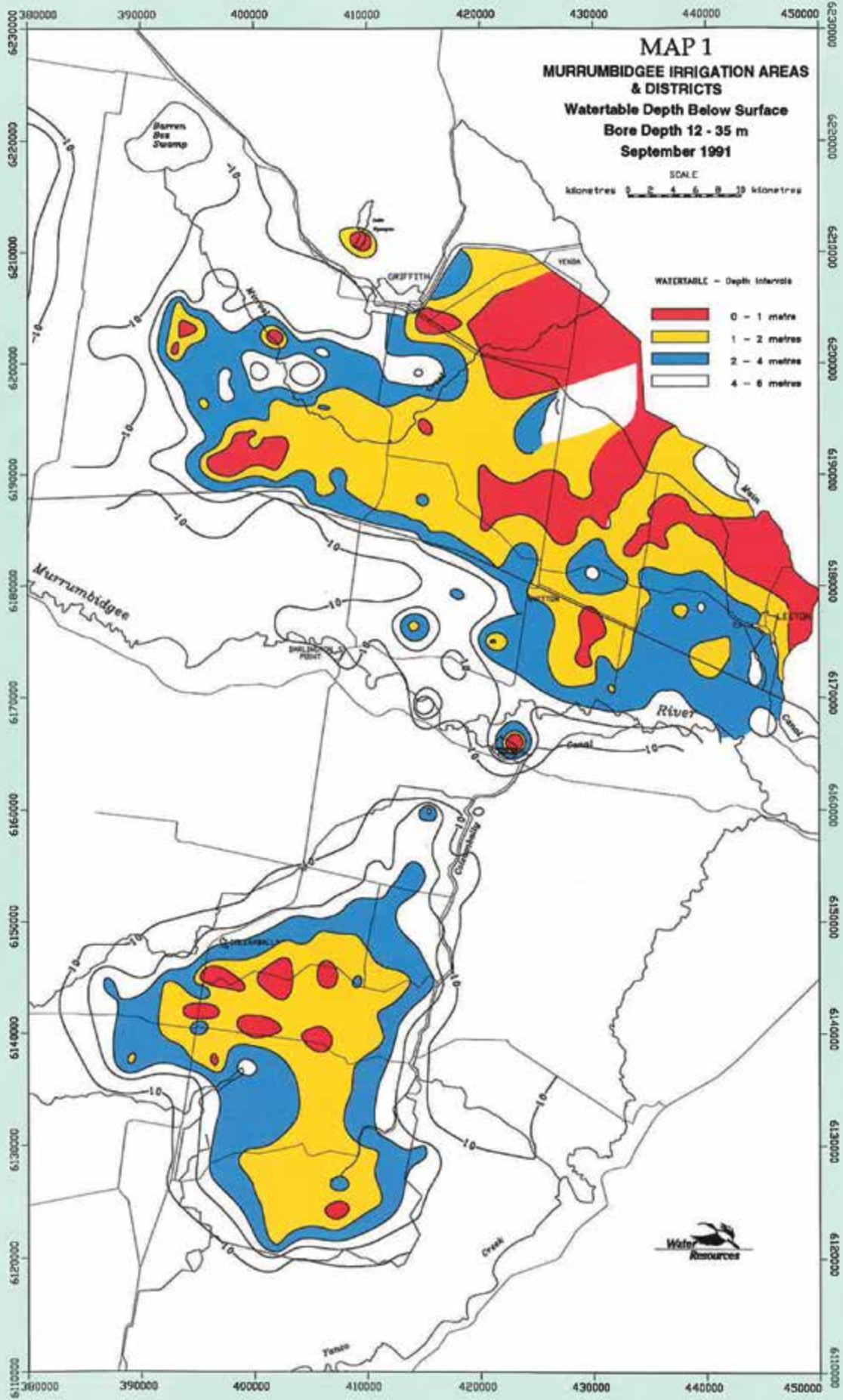
Celebrating 52 years with PHL Surveyors

Greg Wynne is retiring as our longest serving Field Technician

When Greg started at PHL Surveyors in 1972 he was measuring with chains and optical theodolites to place survey pegs, and using an axe and chisel to cut survey marks into the trees. Over the years Greg has kept pace with the advancements in technology, especially GPS, which have changed the way field surveys are conducted. In recent years Greg has focused largely on irrigation surveys, so if you have had a farm plan completed on your property, chances are you have waved to Greg as he completed the survey in the field.

Greg has been an amazing employee and teammate and is well loved by all co-workers (past and present) who have had the privilege of working with him over the last 50 years. We wish him all the best in his retirement!





Rising water tables and increasing salinity have occupied plenty of space in 80 years of *Farmers' Newsletters*. Information, innovation and action have enabled irrigators to continuously adapt to sustain their environments and businesses.

WATER TABLES – HAVE THEY REALLY GONE AWAY?

Annette McCaffery

Communicator, coordinator, researcher

The early 1990s was a period of great change in the southern irrigation areas of NSW.

AWARENESS of rising water tables across the irrigation areas polarised the irrigation community and industry, leading to animosity between irrigators – who was responsible for rising water tables? who should invest in the solutions? It was also a time of proactive initiatives and neighbours working together to address the issues, such as community drainage schemes and tree plantings. It was a balancing act!

At the same time, irrigation areas were cutting the apron strings with government and evolving into area-based state-owned entities and later, irrigation authorities in their own right.

Irrigators were embracing whole farm planning and investing significantly in landforming, drainage recirculation, irrigation efficiency technology and trialling alternative farming systems.

For the first time, we saw depressions in the landscape full of salty water, trees dying and areas of paddocks where crops wouldn't establish.

Irrigators were losing valuable land for production, Landcare groups started to emerge in response to local concerns and Land and Water Management Plans (MIA EnviroWise and Sustaining Coleambally) were established to guide the management of the irrigation areas for the next 30 years by the new irrigation authorities.

Brave new world

The newly formed irrigation authorities had to get serious about monitoring crop water use and use the soil classification work done by CSIRO in the 1960s to restrict crop rotations. Change in farming behaviours had to come to ensure the irrigation community adapted and continued to thrive.

Irrigators were angry and concerned that their asset could have a diminishing value if 'others' knew they had a water table problem. It wasn't an easy time for government, industry or irrigators and yet we have persisted and adapted to changing conditions.

The message back then was always about managing risk. A concept widely accepted now for all things related to our agricultural way of life. When I go back to the irrigation areas now I see exactly what we were promoting back then. Diverse crop choices, land use planning, cutting edge irrigation technology, a thirst for building skills and knowledge about holistic land management and not just production, and thriving irrigation industries and areas.

Climate is a big influence on the system and the easy option would be to think that the millennial drought solved all the problems with water tables. . . but did it?



In the early 2000s, water use efficiency was a new term globally. The More Crop per Drop campaign in the MIA supported the concept of growing quality produce while optimising water productivity and long-term sustainability.

Left page: *Farmers' Newsletter*, Large Area No. 140, December 1992

Crop types

Let's look at a quick snapshot of then and now. There have been significant changes in the crops being grown over 20 years indicating how much the irrigation farming systems and rotations have changed and adapted to environmental and profitability constraints.

Table 1: Comparison of crop areas (hectares) in the MIA and CIA

Crop type	MIA		CIA	
	2001–02 ¹	2022–23 ²	2001–02	2021–22 ³
Rice	36,798	21,034	27,493	4,643
Summer cereal	3,352	1,945	3,808 (corn/maize)	4,583 (corn/maize)
Winter cereals	0	20,276	21,103 (wheat)	16,275 (wheat)
Summer pasture	14,640	1,467	11,581	5,485
Winter pasture	0	5,081		
Summer oilseeds	440	760	3,297 (soybeans)	153 (soybeans)
Winter oilseeds	0	3,728	2,191 (canola)	5,425 (canola)
Other crops	236 (cotton, nursery, recreation)	13,626 (cotton)	0 (cotton)	13,298 (cotton)
Vegetables	3,204	1,595	0	0
Citrus	4,960	7,197	0	0
Vines	11,596	16,656	0	0
Other fruits	1,388	1,022	0	0
Plantation	184	93	0	0

¹ Environmental Performance Report 2001–2002, Murrumbidgee Irrigation

² Annual Compliance Report 2023, Murrumbidgee Irrigation

³ Annual Compliance Report 2022–23, Coleambally Irrigation

How have our water tables behaved?

In the 1990s, the focus was on water tables within 2 metres of the surface, which presented the highest risk for soils developing salinity. This remains the case today.

In 2002, 125,000 hectares of the MIA had water tables within 2 metres of the soil surface and in 2022, there is only 11,103 hectares.

In 1998, 36,041 hectares of the Coleambally Irrigation Area (CIA) had water tables within 2 metres of the soil surface and in 2022, there is only 177 hectares.

That is good news. Or is it?

Unfortunately, groundwater levels are rising again in both irrigation areas because of the succession of wet years and a saturated catchment. The areas with water tables less than 2 metres is still low compared to the 1990s but the areas between 2 metres and 4 metres are significant, and both have a rising trend.

Climatic conditions do influence this but so does irrigation management which is the only thing that you can control. The 'potential' risk needs to be proactively managed to avoid the angst of previous times.

Table 2 is a summary of the area of the MIA and CIA with water tables within 2 metres and between 2 metres and 4 metres of the soil surface.

Table 2: Area (hectares) of the MIA and CIA with water table depths at 0–2 m and 2–4 m from the soil surface, 2019 to 2022

Year	MIA ¹		CIA ²	
	Area < 2 m	Area 2–4 m	Area < 2 m	Area 2–4 m
2019	161	26,924	101	8,139
2020	178	34,392	40	2,933
2021	3,803	50,627	61	10,115
2022	11,103	57,736	177	17,345

¹ Monitoring results, ⁵ to ¹² m piezometers, Annual Compliance Report 2023, Murrumbidgee Irrigation

² Monitoring results from the ⁰ to ¹² m piezometers, Annual Compliance Report 2022–23, Coleambally Irrigation

What does it mean?

It means the same as it did in the 1990s – we must be vigilant, understand how the complex system is changing over time, know how on-farm management influences the groundwater system and adapt our management accordingly to manage the risk. Simple!

The past guiding the future

From the emotive days of the 1990s, irrigators and industry have adapted significantly to a changing world around global expectations for sustainable agricultural production. We have developed our collective capability to adapt and invested significantly in managing our natural resources to pass on to the next generation ... and that will continue.

The IREC *Farmers Newsletter* is a time capsule recording that evolution and it is remarkable. The greatest social experiment Australia has ever seen!

Well done and here is to the next 80 years. 🌅

Annette McCaffery was a Technical Officer for the Salt Action program (NSW DPI) in the 1990s, Coordinator of the Coleambally Land and Water Management Plan and worked with Murrumbidgee Irrigation in delivering water use efficiency programs and the annual compliance reporting. Annette maintains an active interest in the sustainability of agricultural industries in the southern irrigation areas of NSW.



Iva Quarisa (second from right) demonstrating soil water probe technology to a benchmarking group at Griffith Agricultural Institute, 2000.



WINTER WATER TABLE SURVEYS IN THE M.I.A.

**A. VAN DER LEIJ,
WATER CONSERVATION AND IRRIGATION COMMISSION.**

ABSTRACT:

From 1931 to 1971 the Water Conservation and Irrigation Commission carried out water table surveys in the horticultural districts of the M.I.A. The main reasons for these surveys was to examine the causes of high water tables and under which conditions the water tables reach levels which are deleterious to plant growth. After the wet winter of 1956, tile drainage became popular and the water table surveys provided a means of analysing its effect on control of water tables during high rainfall conditions.

THE CAUSE OF HIGH WATER TABLES:

Before irrigation commenced in 1912 the water tables were in equilibrium with the environment at 60 to 90 feet depth below the soil surface. Since irrigation commenced in the M.I.A., water tables have built up to new equilibrium levels which generally are at 3 to 8 feet below the soil surface.

The new equilibrium levels are higher if the land is depressed and ground water flow into the area is possible. The equilibrium levels are deeper if there is a slope in the land surface, making surface drainage easier, if the infiltration rate into the soil is less, or if the land is more elevated and natural deep drainage exists. The equilibrium level also varies with the climatic conditions from season to season, or with differences in irrigation management.

DEVELOPMENT OF WATERLOGGED CONDITIONS:

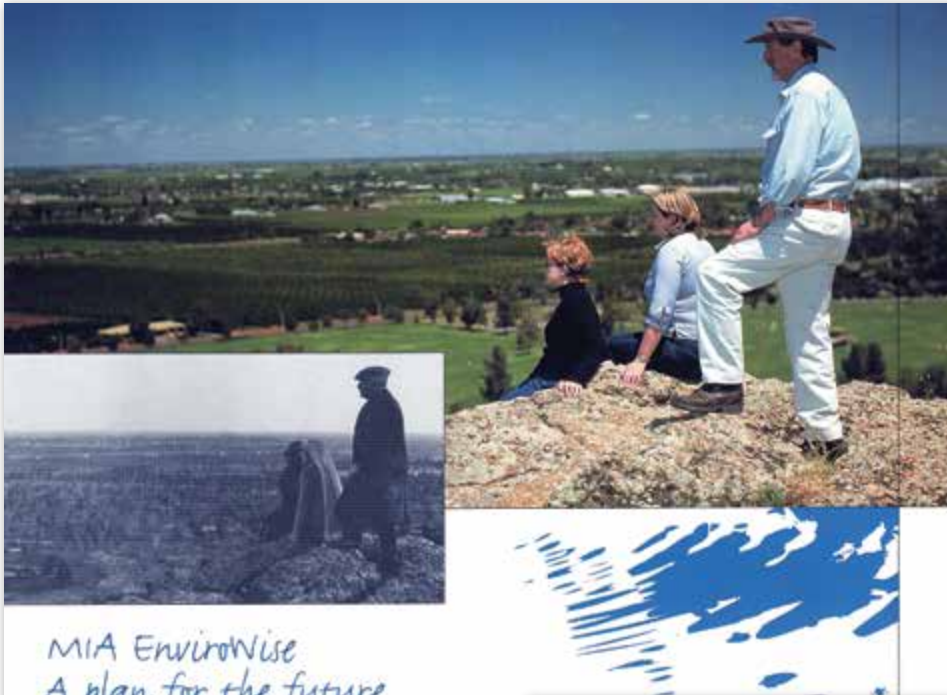
Waterlogging is the condition under which the water table is sufficiently close to the surface for sufficiently long periods as to result in reduction of plant vigor and/or yield, and under extreme conditions, death of plantings. Under irrigation the water table may build up to undesirable levels. However, with careful irrigation management the deleterious effects may be minimal.

It was found, however, that the worst damage occurred during years that the winter rainfall was well above average. During the 1931, 1939 and 1956 winters a large proportion of the permanent plantings was destroyed. During the other years the damage was not, or hardly, noticeable. It follows therefore that the equilibrium depth to the water table developed because of irrigation practices leaves insufficient buffer in the soil profile for the storage of possible excessive rainfall without causing waterlogged conditions.

TILE DRAINAGE:

Tile drainage is one of the means of subsoil drainage to control water tables levels. The design of tile drainage systems in the M.I.A. is based on the principle that it should be able to reduce the water tables levels at such a rate that waterlogging does not occur. The design criteria therefore depend on the amount of water which may infiltrate in the soil during extremely wet winters which may occur about once in ten years.

The installation of tile drainage, which became popular after the wet winter of 1956, continued throughout the following years at a declining rate to the extent that, in the Mirrool Area, well over 50 percent of horticultural land had been tile drained, with a much lower proportion in the Yanco Area up to 1971. A significant proportion of the remainder is not suitable for tile drainage because of low soil permeability or other factors, such as presence of stone.



MIA EnviroWise A plan for the future

On the 13th of July, 1912 the Hon. Arthur Griffith, Minister for Agriculture, received a standing ovation and a shower of applause, at the Yanco regulator releasing the first water for the Murrumbidgee Irrigation. The MIA was considered to be "a scheme for the poor man ... to establish a future for their families". The opening of the MIA was a continuing theme for soldier settlers and European immigrants. Today, thanks to irrigation we have a rich and diverse area with a landscape of paramount importance to us. Today with improved technology and communication we are enjoying the benefits of irrigation, but also of the downside of irrigation: salinity. It is now time to launch a new plan for the future and continuing the MIA region. This plan is called MIA EnviroWise.

What is MIA EnviroWise?

MIA EnviroWise aims to ensure the environmental, social and economic future of the MIA. It ensures we are all working together towards a common goal. It describes the priority actions for all rural and urban communities where appropriate. It is a joint venture between government and our community. MIA EnviroWise will be implemented over 30 years on behalf of the MIA region.

MIA Envirowise brochure (2002)

Where to for Coleambally?



Everything appears to be O.K. in the C.I.A. - rice yields are at an all time high and incomes are being supplemented with alternative crops such as soybeans, canola and faba beans.

Local sports people are having a good run, and so is Garry Kelly's horse.

The Murrumbidgee County Council is expressing great faith in our future, judging by the expensive new power lines and substations being constructed, and the new extensions to the Bowling Club are a real inspiration.

Gloomy tales of falling land values are being given the lie by good prices at several recent sales.

However there is a dark side. Rising water tables are threatening our land with the arch-enemy of irrigation - salt.

This booklet is designed to explain what our problems are and what we can do about them.

Sustaining Coleambally booklet (1998)

“

Congratulations to the IREC on 80 years of publication of the *Farmers' Newsletter*.

This publication has provided a valuable forum for the irrigated cropping industries for the last 80 years and was an important means of extending research findings for both research and district agronomists when we worked for NSW DPI at Yanco. It also gave us valuable background to earlier research and across other agricultural issues. The newsletter helps to keep growers informed about the latest technologies and practices as they happen, and helps maintain their standing as leaders in their industries.

It is great to see that the newsletter is still providing an important role in irrigated agriculture in the region and we hope that it continues well into the future.

Mary-Anne Lattimore

Research/District Agronomist, Yanco 1978–2013

Dr Geoff Beecher

Research Agronomist, Yanco 1988–2014

”

“

Murrumbidgee Irrigation extends its congratulations to IREC on reaching 80 years of publishing the *Farmers' Newsletter*. This milestone is a testament to IREC's unwavering dedication to supporting the irrigation farming community and ongoing efforts providing valuable, relevant and timely research and information to growers.

For eight decades, the newsletter has been an important resource, keeping irrigators informed, connected and empowered. The commitment of IREC to advancing knowledge, supporting research, fostering innovation and promoting sustainability in irrigated agriculture has had a lasting and meaningful impact on the MIA and the broader industry.

We are proud to be a partner in supporting irrigators alongside IREC and look forward to continuing our successful collaboration for many years to come.

Murrumbidgee Irrigation

”



10-YEAR RUBBER GUARANTEE – BUILT TO LAST, PROVEN TO PERFORM!

We're excited to offer a 10-year guarantee on our premium rubber doors. Built for durability, our rubber is proven to last, with over 31 years of reliable use. If it fails within 10 years, we'll replace it for free, giving you confidence in long-term performance.

RELIABLE SERVICE & REPAIRS – KEEP YOUR IRRIGATION SYSTEMS RUNNING SMOOTHLY

Our products are constructed to last, sometimes wear and tear, and accidents resulting in damage may happen. Our on-farm team is well-equipped and available to assist with any necessary repairs, no matter the size.



GET IN TOUCH: ● 1800 254 594 ● info@padmanstops.com.au ● www.padmanstops.com.au

BID FOR BETTER RICE

- ★ 100 Foreign Varieties Tested
- ★ Pure Seed Programme Plans
- ★ Five Rotations on Trial

M.I.A. rice yields per acre have been credited as amongst the highest in the world—an achievement not by luck, but largely through the work of Agricultural Department research teams.

In making this comment, Mr. Bruce Owen French, Manager, Yanco Experiment Farm, said rice research at the farm at present was designed to maintain and improve the yields and economy of the industry.

A very large proportion of time of two research officers, Mr. T. R. Lawler and Mr. B. K. Smart, was being devoted to rice research.

Mr. Lawler was recently made responsible for the plant breeding programme. The present pure seed scheme operating on the M.I.A. will depend on his initial head selections and subsequent care in testing and building up seed stocks.

Single head selections which are made every year, become available to the farmer as pure seed in 7 years' time. In any one year, seed is handled in seven different stages of development with the result that a new line of pure seed becomes available every year.

Last year, 400 heads were selected and sown in short rows. This year the best 50 short rows were selected. These are to be sown in long rows where they will be tested for yield, evenness of type and maturity.

WITHOUT A BREAK

End result of the single head selections made last year will come in 1958, when the harvest of the registered seed grower goes to the Rice Board for sowing by farmers as pure seed.

The programme goes on without a break, to ensure a continuity of the pure rice seed scheme which can do so much to lift M.I.A. yields still further.

A research programme aimed specifically at helping ricegrowers in the new areas around Wakool has been launched. The object is to develop a new high yielding strain which will mature a little earlier than Caloro II.

A number of selections have been made and plots established in the Wakool district.

COOKED AND TASTED

In addition to this task, Mr. Lawler tests each year more than 100 different varieties and selections of rice which reach Yanco from the rice-growing countries of the world—Malaya, Japan, Italy, India, North Africa, Pakistan, U.S.A., Indonesia to name only a few.

The more promising introduced varieties are tested against the standard Caloro II. for yield and quality. This involves both milling and cooking.

Mr. French disclosed that some of this material had been sent for trial in the Northern Territory and Western Australia.

Major project in the experimental work for which Mr. Smart has been responsible was the rice rotation experiment which is designed to investigate the influence of five different rotations upon soil fertility and productivity.

EXPERIMENTS OVER 25 YEARS

The 25 plots in this experiment can be seen from the Yanco-Narrandera road—there are five rotations each of which is repeated five times. Each

As a major grain crop of the region and strong historical ties between IREC and the rice industry, the *Farmers' Newsletter* has delivered many articles on new rice varieties and new management practices to optimise grain quality and production, and more recently, water use efficiency.

RICE VARIETY DEVELOPMENT

Laurie Lewin

Former rice breeder

The *Farmers' Newsletter* covered a very important period in the development of the rice industry, which has seen average rice yield improve from around 4 t/ha to more than 10 t/ha. It also coincided with the development of rice as an important local industry that built many reliable export markets.

MANY of the reasons for this development have been found in the pages of the newsletter over its 80 years. These articles covered all areas of interest, including breeding, quality, agronomy, sustainability, water management and extension initiatives.

Rice variety development has been one topic highlighted in many issues of the newsletter over the decades. An article in 1970 highlighted the performance of Calrose and Kulu over various nitrogen rates. Variety by nitrogen trials have been highlighted in many subsequent editions of the newsletter. This interaction between variety and nitrogen was very important in supporting the semi-dwarf 'revolution' after the release of Amaroo in 1979. The article also highlighted the importance of Kulu as the first locally bred rice variety aimed at new rice types for specific markets. Kulu was bred by Dr. Don McDonald and paved the way for the development of new markets – particularly in Hong Kong.

A later article by Hartley and Lewin (*Farmers' Newsletter*, Large Area No. 111, 1979) detailed the performance of two new long grain lines. One of these (303D-5) was subsequently released as Pelde and this was an important variety for over 10 years, underpinning the importance of varieties to meet specific markets. Pelde was followed by many varieties aimed at specific market niches (Table 1).

While the major type of grain is now the bold medium grain varieties popular in the Middle East, other types have assumed importance at times due to specific market requirements.

Table 1. Rice varieties released from Yanco to meet specific market and growing requirements.

Long grain	
Soft cooking	Kulu (1967), Inga (1973), Pelde (1982), Langi (1994)
Firm cooking (low GI)	Doongara (1989)
Fragrant	Goolarah (1991), Kyeema (1994), Topaz (2014)
Short-medium grain	
Sushi type	Koshihikari (introduced), Opus (1999)
Arborio	Harra (1991), Illabong (1993)
Bold medium	Reziq (2005), V071
Calrose type	
Mid duration	Amaroo (1987), Bogan (1987), Sherpa (2008)
Short duration	Echuca (1989), Jarrah (1993), Millin (1995), Viand (2017)

^a Namaga (1997) and Paragon (2002) were released but not grown widely.

Left: *Farmers' Newsletter*, Large Area No. 8, 1953

Meeting the future challenge

Breeding varieties to meet specific markets, combined with high yield potential are not the only challenges facing the modern rice breeding program. Competition for irrigation water means that rice needs to be able to compete for water with other enterprises. New varieties are required to meet the challenge of improving water productivity. Varieties able to grow under reduced irrigation systems and with greater cold tolerance will be required. The good news is that breeders now have access to improved techniques such as genetic markers, improved breeding systems and improved access to resources. Rice Breeding Australia, the new breeding company, has the skills and abilities to meet these and future challenges.

When we look back to the many articles in the 80 years of the *Farmers' Newsletter* and consider how much the whole industry has achieved, there is real scope for optimism about the future.

Congratulations are due to the IREC for overseeing 80 years of publishing the newsletter. It has been an extremely important outlet for information for producers about research and extension that may directly influence their prosperity. 🌅

Acknowledgements

None of the progress in rice breeding would have been possible without the dedication of many people over a long period. This includes all the support staff that have given so much.

Plant breeders Walter Poggendorff, Dr Don McDonald, Ed Boerema, Dr Ross Hartley, Dr Russell Reinke and Dr Peter Snell have led, or been involved in, all the variety releases in NSW. Cereal chemists Tony Blakeney and Dr Melissa Fitzgerald ensured that varieties met specific quality and market requirements.

Dr Laurie Lewin was a rice breeder at the NSW Department of Agriculture (Yanco) 1969–73 and 1976–97, and Director, CRC for Sustainable Rice Production, 1997–2005.



A collection of rice breeders in 2005. From left, Dr Peter Snell, Dr Russell Reinke, Dr Laurie Lewin and Dr Don McDonald.

FARMERS' NEWSLETTER

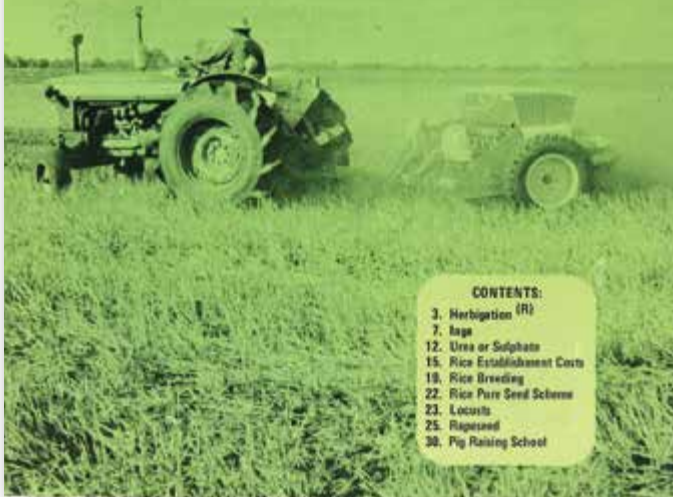
Registered for posting as a publication, Category (A).

LARGE AREA 111

35c

JULY, 1979

Method of Rice Crop establishment affect energy use



CONTENTS:

- 3. Herbicition (R)
- 7. Inga
- 12. Urea or Sulphate
- 15. Rice Establishment Costs
- 19. Rice Breeding
- 22. Rice Pure Seed Scheme
- 23. Locusts
- 25. Rapeseed
- 30. Pig Raising School

Progress in Rice Breeding

By: Ross Hartley & Laurie Lewin,
Agricultural Research Centre,
YANCO NSW 2703

THE MAIN OBJECTIVE OF THE RICE BREEDING PROGRAMME AT YANCO AGRICULTURAL RESEARCH CENTRE IS THE DEVELOPMENT OF COLD TOLERANT, STRONG STRAWED RICE VARIETIES WITH GOOD COOKING QUALITY AND HIGH GRAIN YIELDS. OUT OF THIS PROGRAMME LAST SEASON, THREE HIGHLIGHTS EMERGED.

Long Grains

Two new long grain selections look promising as potential varieties. They are YR 303D-1 and YR 303D-5. Both are sister selections out of the cross YR 13-89-11 (a sister selection to Inga) and Bluebelle, an early maturing long grain variety from Texas. Yields of these two selections have exceeded Inga yields by 0.8 tonnes per hectare and 0.4 tonnes per hectare respectively. They flower at least five days earlier than Inga and have milling quality, grain appearance and cooking quality equivalent to Inga. However, these selections are susceptible to straight-head, have gold hull and are pubescent. Refer tables 1 and 2.

The 303D lines were tested against Inga and Kulu in three large replicated trials last season, one of which was in the Deniliquin region. In addition six seed increase blocks were sown at Yanco. The three blocks of YR 303D-1 varied in yield between 8.9 tonnes per hectare and 9.8 tonnes per hectare. Milling quality did not vary between the lines but the higher yielding line also had superior milled grain appearance. Yields of the three YR 303D-5 lines varied between 9.0 tonnes per hectare and 9.9 tonnes per hectare with no difference in milling quality. There were no differences in appearance between the YR 303D-5 lines but in general, they were superior to the YR 303D-1 lines.

Pure Seed production has already begun for the YR 303D lines. It will run concurrently with the district testing of these selections. Limited commercial production is still a few years away. Behind those promising selections are a number of other crossbreds which look interesting. However, the realization of them as commercial varieties is further into the future.

ENERGY - Costs of Rice establishment

By: Philip Posman,
Economist,
Department of Agriculture,
LEETON NSW 2705

IN JULY, THE PRICE OF DISTILLATE FUEL ROSE BY 4 CENTS PER LITRE TAKING ITS PRICE TO 20.5 CENTS PER LITRE. WITH THE PROSPECT OF PRICES INCREASING 25% BEFORE THE END OF THE YEAR, AND DOUBLING WITHIN TWO YEARS, MORE INTEREST IS BEING DIRECTED TO PRACTICES WHICH MAY REDUCE TOTAL FUEL CONSUMPTION AND ULTIMATELY COSTS.

Conventionally sown rice commonly requires a 80-100 h.p. tractor together with landplanning equipment. The increasing rice acreages has placed added importance on sowing time which has caused questions to be asked about the benefits of sod-seeding rice. A major area of interest is in its comparative establishment costs and specifically, its energy costs.

The budgets on the following pages are only concerned with those costs that differ when establishing rice under the methods of combine, aerial and sod-seeding. To that extent, budgets should be considered only as partial budgets. Such costs as seed, harvest and cartage (contract rates), water and armyworm/rice beetle control would differ (if at all) only marginally from method to method. The budgets examine Inga rice being sown firstly into rice stubble and secondly, into pasture.

The rate of Sprayseed application in the sod-seeded situation is dependent to a great degree on the stocking rate for the property concerned. Basically, the greater the stocking rate, the more chance of decreasing herbicide requirements. A blanket recommendation for Sprayseed application is 2-3 litres per hectare.

Some guide to total establishment costs under these methods can be achieved if we note that total establishment for Inga rice combine sown into rice stubble for the 1979-80 season is approximately \$300/ha. Therefore, a saving of around \$10/ha would be achieved for a sod-sown crop under similar circumstances.

However, the interest of establishment costs in forthcoming seasons is in the area of energy requirements and its proportion of total establishment costs. Of the \$5.20 per hour (operating costs only) allowed for a 93 h.p. tractor, approximately \$2.60 is made up of the costs for fuel and oil. A further energy consideration, is the amount used for aerial application of seed, herbicides, fertilizers, etc. (Cont.)

END THE YEAR!

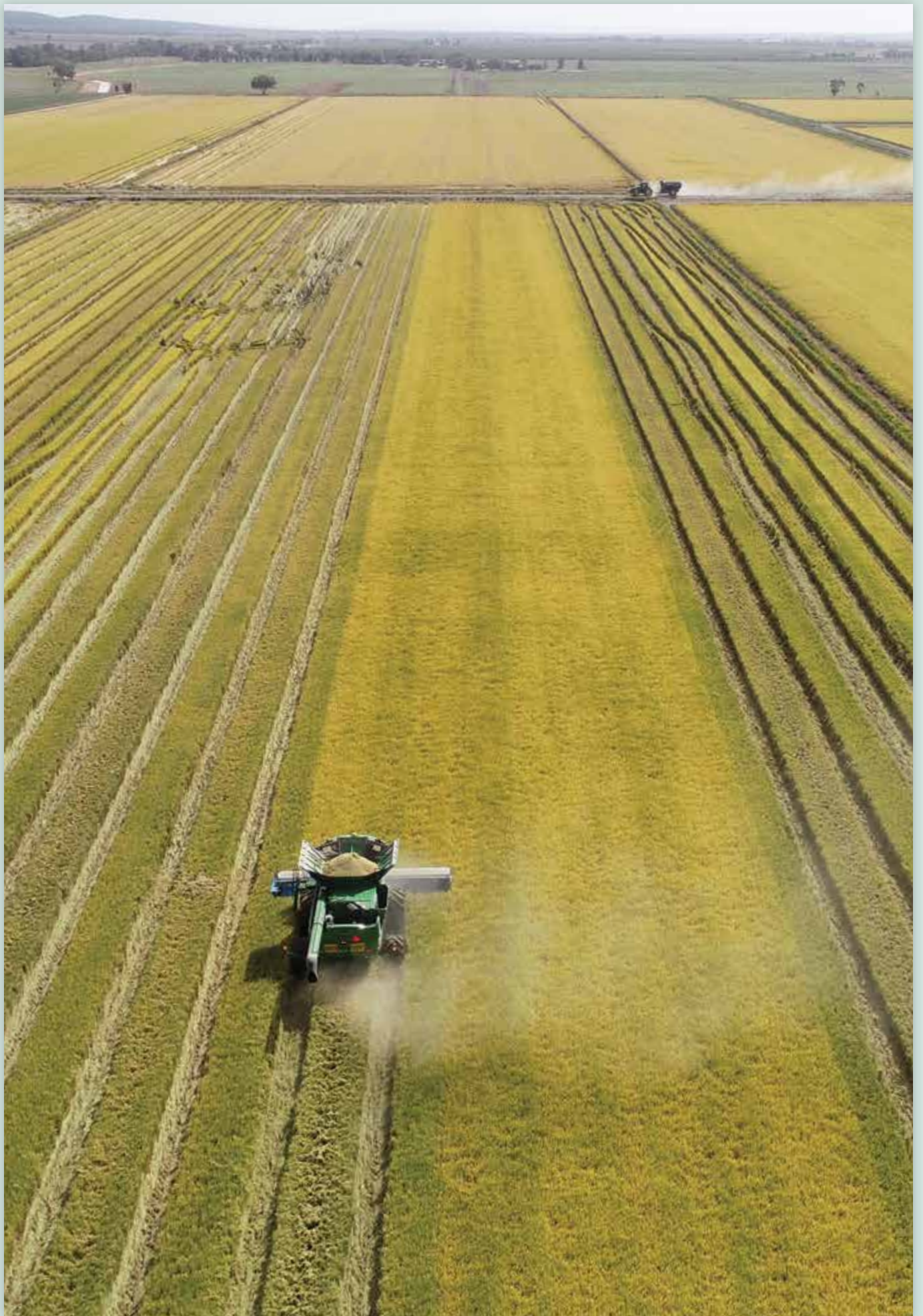


Who knows with nitrogen rates? But I read the basic recommendations of 1978 and I'd remain the same. Growers who have a tendency to balk should stick to it. Can we stress when we could double rates? The factoring of a maximum nitrogen application to the available paddocks would be -

1. seedling rates - because of the increased ability of the method light and water rates have been advised. Rates of 10 kg/ha for Inga and 130 kg/ha for sod-seeding stubble compared against Inga followed in these low fertile paddocks. These rates should be used when aerial sowing or cut the low nitrogen rate and avoid the danger of nitrogen deficiency in the first growth of Inga and sod-seeding.

2. early crop growth - the nitrogen rate should be the multiplier, early growth but avoidance of a flag crop at flowering. From experience a rice stubble paddock Inga receives 1.1 t/ha water, 1.2 t/ha permanent water and 1.2 t/ha high water/ha at head. Inga should be a 1.2 t/ha water. The water permanent water can be judged more accurately by an annual soil test of soil testing to assess the effect of various soil histories on crop yield. Reducing N application should be avoided if possible if the green leaf up 1000 leaves per ha (over 2-3 weeks) and 1 kg/ha nitrogen at sowing components for the Inga should be used. This would require the sulphate of ammonia in small quantities at sowing, but help early growth.

3. soil research basis - we need to know more about how the soil can be used when water is applied. This is the case in permanent water and high water. A soil test of 1000 leaves per ha (over 2-3 weeks) can be obtained by applying additional nitrogen at flowering as opposed to the 1.2 t/ha with tillering application. But if a soil test can be performed it could be a guide as to the likely benefit of higher rates at head in a crop.



Rice yields have been on an upward trajectory in southern NSW since the first commercial crops of Californian varieties in the 1920s. However, decades of articles in the *Farmers' Newsletter* reveal a more cyclical nature to the practices and problems of rice growing.

BACK TO THE FUTURE – RICE YIELDS OVER THE LAST 50 YEARS

Mark Groat

Manager - Grower Services and Extension
SunRice

The last few weeks I've had my Marty McFly moment! Meandering through decades worth of pages of IREC *Farmers' Newsletters* was a real blast from the past. Not only did this consume heaps of time – they suck you in so easily! – but it renewed my respect for the researchers, extension people and growers that helped develop an industry and a thriving irrigation area.

THERE was a time before internet, drones, satellite imagery, yield maps, irrigation automation and precision machinery. The big tractor was 150 horsepower and a big flow rate was 8 ML/day. Mobile phones only existed in Maxwell Smart's shoe and IREC newsletters were all typed.

The era of Calrose

In the 1970s the names of rice varieties were Calrose, Inga and Kulu, and they were combine-planted or sod-seeded into contour bays. In 1974, while trials of Calrose yielded up to 10 t/ha, the average yield for the industry was 6.2 t/ha (6.8 in the MIA and 6.4 in the CIA). Barnyard grass was the biggest issue facing rice growers with yield losses of 80% recorded where molinate and propanil weren't used effectively.

A decade on and Calrose is still the dominant variety, followed closely by M7 and the rise of the long grain variety, Pelde. Average yields were 6.5 t/ha, with the MIA at 6.9 and Coly at 6.5. Only 6% of the MIA was aerial sown, 41% sod-seeded into pasture and 53% combine sown. Coleambally had 51% aerial planted and the Murray Valley 92%. At this time 2.5% of growers owned a computer, with 0.5% using it for farm and/or financial management.

The dawn of Ricecheck

The 1985–86 season introduced the new 'rice-growing method' called Ricecheck, with a pilot study of 29 M7 rice crops. The major highlight from this trial is that 'there is no single factor that will consistently produce high yields. Increased yields will only arise by ensuring all key factors are carried out correctly. Missing one factor will significantly decrease yields.' Starting to sound familiar ...

As we head into the 1989–90 season, a record average of 8.1 t/ha was achieved. The MIA had risen to 55% of the area aerial sown, Coleambally 90% and Murray Valley 97%. Calrose was superseded by the rise of the high yielding, semi-dwarf medium grain varieties Amaroo, Echuca and Bogan. Varieties developed at the Yanco Agricultural Institute made up 90% of overall plantings. The new rice herbicide Londax DF was released. Ricecheck was widely adopted through grower groups run by the NSW Department of Agriculture extension officers. The slogan of the time was 'Let's Get it Right!'

Breaking through the continuum

And get it right they did. The 1990–91 season broke all records with an average 9.05 t/ha – a 12% increase from the previous season and a huge 41% above the previous 10-year average. Aerial sowing increased to 87% of total rice area, 75% in the MIA with sod seeding into pasture a significant second. Calrose was all but gone, with Amaroo, Bogan and Echuca making up over 63% of the crop. The rest was Pelde (28%) and up and coming speciality varieties Goolarah and Doongara (4%).

More than 13,000 hectares in the MIA averaged over 10 t/ha of the high yielding Amaroo, with a significant few even cracking the ceiling at 12 t/ha. Two future challenges presented themselves: how to maintain and improve the results from the 1990–91 season, and how to minimise yield variability between seasons.

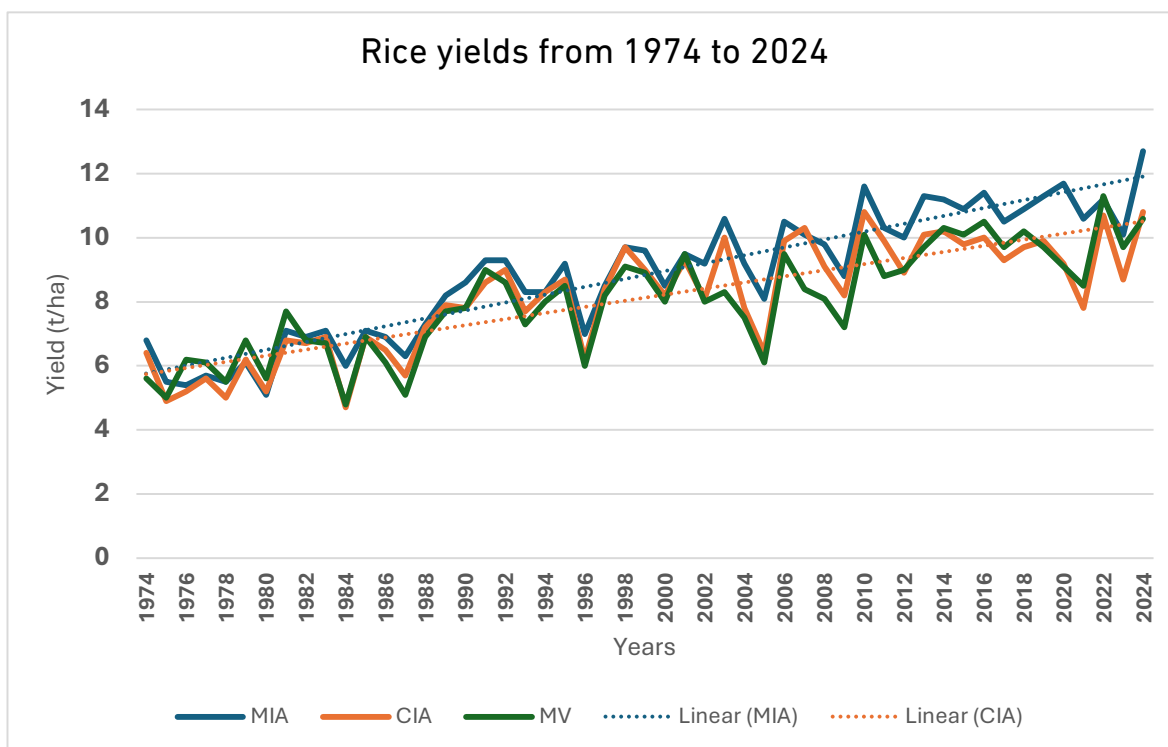


Figure 1. The trajectory of rice yields in southern New South Wales since 1974.

This proved a challenge. These average yields were not beaten until 1998, averaging 9.4 t/ha. While yields are steadily increasing over time, seasonal variability still remains a challenge to the industry as seen in Figure 1. While some seasons were exceptional (2003, and the beginning of the millennium drought, averaged 10.2 t/ha) the next significant yield increase came with the release of Reiziq in 2005. Barring the cold 2009 year, consistent averages over 10 t/ha were achieved, with individuals achieving the magic 15 t/ha from 2016 onwards.

Fast forward to 2024. Reiziq is superseded by the high-yielding, semi-dwarf, bold medium grain Matilda (formerly V071). The industry has hit its best average yield ever at 11.7 t/ha, with the MIA averaging 13 t/ha of Matilda and individuals in all valleys with paddocks over 16 t/ha. The best-ever recorded yield across 42 hectares of 16.85 t/ha was achieved in the MIA. These growers 'got it right', but the challenge will be the same, improving on this consistently.

Staying on track to the future

Drill sowing is now 72% of the industry and rising. Layouts are terraced bankless, flat bays with a bigger trend to beds in bays, with flow rates of 30 ML/day plus. Water use was never mentioned pre-90s but it is now the focus of much research and extension, and it is the biggest single influencing factor for the industry and the area.

We now monitor by satellite individual crop growth in real time, managing timing of crop stages, irrigation and nitrogen rates based on these images. Variable rate fertiliser applications are becoming the norm, in-field variability analysed using yield maps generated by the header.

It does make you wonder where we will be in another 50 years, what technologies will be available and what those of the future will make of today.

One thing is for certain, those of today know we stand on the foundation of the hard work and dedication of those of the past. You have our gratitude and respect. 🌅

Acknowledgement

Farmers' Newsletter articles from Warwick Clampett, John Lacy, Laurie Lewin, Russel Reinke, Liz Humphreys and Maarten Stapper.

Mark Groat has worn many hats in irrigated agriculture including farming, consulting and project management. He is a Nuffield Scholar, who studied water efficiency and reduction of greenhouse gas emissions in rice production. Currently, Mark is the rice industry representative on the IREC Executive Committee.

FARMERS' NEWSLETTER

Irrigation Research & Extension Committee

Private Mail Bag C.S.I.R.O. Division
of Irrigation Research, Griffith, 2680
N.S.W., Australia.
Phone: Griffith 62 1700 (six lines).

Registered at G.P.O. Sydney, for transmission by post as a periodical

LARGE AREA - NO. 68

PRICE 30c.

APRIL, 1969



The Art of Rice Growing

D. E. Wallin
Principal Agronomist (Irrigation)
Dept. of Ag., Sydney.

MORE THAN HALF THE SUCCESS IN RICE GROWING IS TIED UP OVER THE FIRST 6-8 WEEKS IN THE ESTABLISHMENT OF THE CROP SAID THE PRINCIPLE AGRONOMIST (IRRIGATION) MR. DON WALLIN. A GOOD STAND IS A MUST IF MAXIMUM YIELD AND RETURN TO GROWERS IS TO BE ACHIEVED.



Is Your Barnyard Grass Really Necessary ?

D. J. Swain
Research Agronomist (Weeds)
Y. A. C. & R. S.

This question was asked by Mr. D. J. Swain, Research Agronomist (Weeds), Yanco Agricultural College & Research Station.

THE DAY IS PAST WHEN BARNYARD GRASS WAS CONSIDERED AN UNAVOIDABLE EVIL IN RICE GROWING. ANY RICE GROWER WHO HAS A GRASS-INFESTED RICE CROP THIS SEASON HAS ONLY HIMSELF TO BLAME.



The Editor Talks To You

Since the first commercial rice crop was grown forty (45) years ago a tremendous amount of research has been undertaken into every facet of the growing of this crop.

Many thousands of man hours have been spent in the laboratory, the glasshouse and the paddock in an endeavour to improve the quality and production of established varieties, as well as in breeding varieties more suited to the commercial needs of the industry.

Seeding rates have long since been established and now it has been proved to the satisfaction of the industry that seed treated with a combination insecticide/fungicide is worth another two to three cwt. per acre.

Nitrogen has been found by exhaustive trials to be the only fertilizer to be of benefit to the crop and while rates are not fully determined soil testing trials have indicated the minimum N requirements on many of our soils while time of application and depth of sowing has been recorded.

Methods of sowing under various conditions are well known just as are irrigation practices and weed control.

Blood worms and snails appear to be the only pests of any significance while the crop appear to be free of any serious disease.

In all, there is a considerable amount of first class literature available to the grower on ricegrowing.

This edition of the Farmers' Newsletter adds to this store of knowledge.



Sodseeding of Rice

BY
W. S. CLAMPER
DISTRICT AGRONOMIST
COLEAMBALLY

W. S. Clamper
District Agronomist
Dept. of Ag., Coleambally.

SOD-SEEDING OF RICE INTO PASTURES COULD BECOME A POPULAR METHOD OF SOWING IN THE FUTURE AS IT OFFERS MANY ADVANTAGES OVER THE CONVENTIONAL CONVENTION METHOD TO THE LIVESTOCK PRODUCING RICE FARMER. THIS SEASON HAS SEEN A SLIGHT INCREASE IN THE ACREAGE OF RICE ESTABLISHED BY THIS METHOD. HIGHER INCREASES ARE EXPECTED NEXT SEASON.

Wesley Clamper, District Agronomist, Coleambally made this statement recently.



Aerial Sowing of Rice

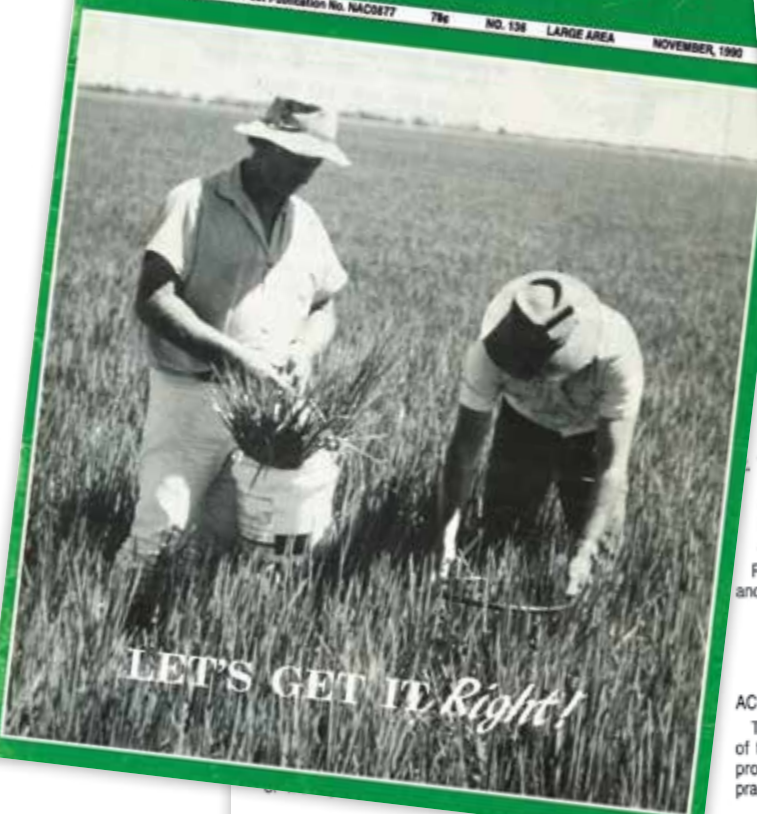
B. J. Scott
Former District Agronomist,
Bathurst.

AERIAL SOWING WAS INTRODUCED INTO THE MURRAY VALLEY IN 1962 SAID FORMER DISTRICT AGRONOMIST, MR. B. J. SCOTT. TWO AREAS OF 20 ACRES WERE SOWN AT TULLAGOON IN CONJUNCTION WITH SALTED LAND RECLAMATION INVESTIGATIONS BEING CARRIED OUT AT THAT TIME. SINCE THEN THE AERIAL SOWN ACREAGE HAS INCREASED TO OVER 10,000 ACRES IN 1968.

Farmers' Newsletter

IRRIGATION RESEARCH AND EXTENSION COMMITTEE

Registered by Australia Post Publication No. NAC0877 796 NO. 136 LARGE AREA NOVEMBER, 1990



LET'S GET IT *Right!*

FIELD LAYOUT? *Contour interval, uniform grade, bank height*

SOWING TIME? *On time*

CROP ESTABLISHMENT? *Plant number after permanent flood*

CROP PROTECTION? *Free from weeds and pests*

CROP NUTRITION? *Nitrogen—preflood & at P.I.*

WATER MANAGEMENT? *Depth at early pollen microspore stage*

HARVEST GRAIN QUALITY? *On time, clean, high moisture*

Ricecheck it!

FOR TOP YIELDS AND PROFITS

NSW Agriculture & Fisheries
and the Rice Research Committee

ACKNOWLEDGMENT:

The assistance of the staff of the Growers Services group of the Ricegrowers' Co-operative Limited in providing the production statistics and undertaking the survey of grower practices is gratefully acknowledged.

Rice field study results 1989/90

John Lacy, District Agronomist and Stephen Moore, Technical Officer, NSW Agriculture & Fisheries, Finley.

The rice field study project commenced with an initial survey in the 1985/86 season. Annual results have been reported in a number of Farmers' Newsletter articles since that time.

In 1989/90 the field study was expanded to cover 136 randomly selected commercial crops in the MIA, CIA and MV. This number allowed for an accurate survey of industry management practices. The study crops were restricted to 58 Amaroo crops from the MIA/CIA and 76 Echuca crops from the MV. Each district was fully represented in the survey.

The data collected was based on the Ricecheck Paddock Records and Checking booklet.

RESULTS

■ Key Checks and Yield

The results yet again validate the 7 key checks which are the basis of the Ricecheck recommendations. As more of the 7 key checks were adopted in either the MIA, CIA or MV the average yield increased.

■ Farmer Adoption of the Key Checks

It is pleasing to find that most farmers are achieving 4, 5 or 6 of the key checks. This ties in with the increase in average yield over the last 2-3 years. A continuing aim of Ricecheck is to further increase farmer adoption of the 7 key checks.

■ Adoption of Individual Checks

Most of the key checks have been adopted by 80-90

percent of farmers. However, EARLY POLLEN MICROSPORE WATER DEPTH remains the most poorly adopted key check with only 23 percent of farmers achieving the 20cm water depth on the high side of bays.

This is vitally important because with the next cold year 77 percent of crops will not be fully protected from cold damage and average yields will significantly fall.

■ Wide Range of Results

There is a wide range of results for each of the key checks between individual farmers, agronomy districts and valleys. This emphasises that farmers need to measure and record their own paddocks to see how they compare to the average and to high yielding paddocks.

UPDATING THE RICECHECK RECOMMENDATIONS

Analysis of the 136 paddocks has resulted in a number of improvements to the Ricecheck recommendations. Changes have been made to the key checks of plant populations, bank height, early pollen microspore water depth and nitrogen topdressing recommendations. All changes are incorporated into the 1990/91 Ricecheck Recommendations Booklet.

FIELD STUDY 1990/91

It is intended to monitor the top 50 farmers in the industry to help finetune recommendations for 12.5 tonne/hectare yields. Because data for Peide is limited a minimum of 30 crops will also be monitored.

“

Over 40 years, from 1962 until my retirement in 2002, it was my pleasure and privilege to primarily work with rice growers and the NSW rice industry as part of the NSW Department of Agriculture Rice Research and Extension Team. This professional, competent and enthusiastic group of Research Officers, District Agronomists and support staff, along with staff of other agencies and commercial service providers contributed in no small way to the growth and improved efficiency of the NSW rice industry from a small industry to one of the most productive and efficient rice regions of the world.

During my working life, rice yields in NSW increased more than 50%. An estimated 50% of this improvement related to the development and adoption of high-yielding, semi-dwarf varieties. The remaining improvement was the result of overall improved crop management, resulting from the adoption by rice growers of technology to improve crop establishment, nitrogen nutrition, weed control and water management.

An important component of the rice extension program was to facilitate adoption through communication of the latest technology. IREC was an important organisation supporting the links between farmers, irrigation industry organisations, government agencies, commercial service providers and the local communities.

For 80 years the *Farmers' Newsletter* has been an important conduit in these processes. It certainly played an important role in the rice industry's success during my career. I am pleased to see this role has continued and despite the impacts of the digital age, the *Farmers' Newsletter* remains a positive link in the operation and development of agricultural productivity and profitability of our irrigated industries.

I congratulate the IREC for its continued activity and my best wishes for future prosperity.


Warwick Clampett

Former Rice Specialist, NSW Department of Agriculture, Griffith

”

Looking for crop insurance?

Contact our crop insurance specialist on 02 6979 0460 or email eldersinsuranceriverina@elders.com.au to discuss your broadacre & cotton insurance solutions.

 Elders Insurance Riverina



Hemjas Pty Ltd ABN 34132556855 trading as Elders Insurance Riverina AR No. 331226 is an Authorised Representative of Elders Insurance (Underwriting Agency) Pty Limited (ABN 56 138 879 026, AFSL 340965) (EUIA). EUIA, acting under its own AFSL, is authorised to distribute Elders Insurance products on behalf of OBE Insurance (Australia) Limited (ABN 78 003 191 035, AFSL 239545), the product issuer. Visit www.eldersinsurance.com.au to consider the relevant Product Disclosure Statement and any applicable Target Market Determination to decide if the product is right for you.



Cotton management practices being trialled at the IREC Field Station at Whitton in 2021.



Cotton picking occurring at a nitrogen rate and timing trial at Benerembah in 2016.

The January 1966 edition of the *Farmers' Newsletter* was devoted entirely to the prospects and challenges of cotton production in southern NSW. Despite high hopes it would be another 50 years until success was sustained.

COTTON PRODUCTION IN SOUTHERN NSW

Kieran O'Keeffe

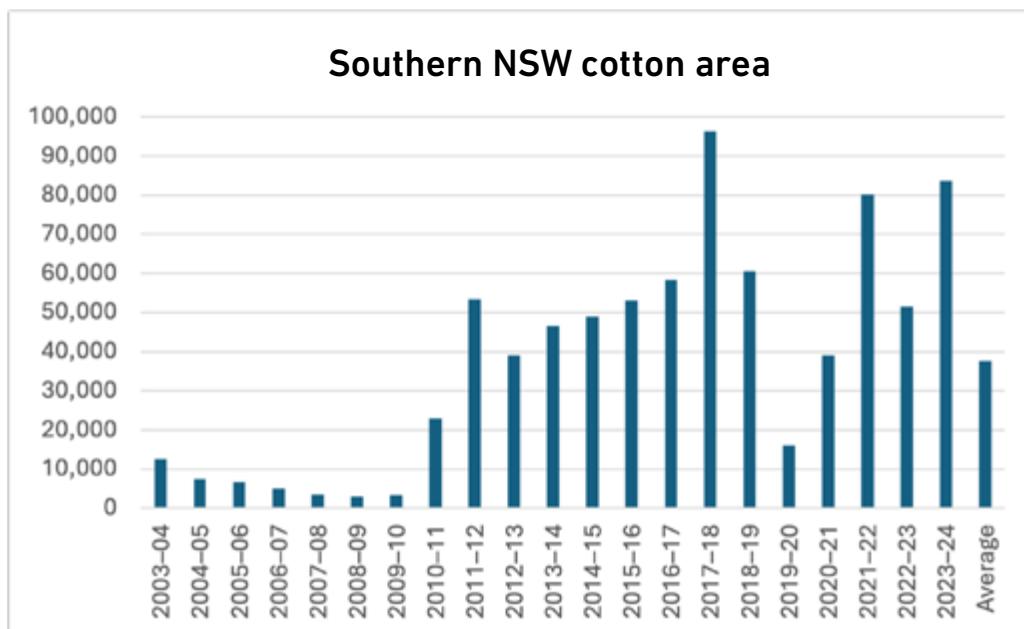
CottonInfo, Regional Extension Officer

Cotton was first grown commercially in the Riverina in the 1960s. A cotton gin was established at Darlington Point in 1964 and the CSIRO conducted a cotton breeding program for many years at Griffith.

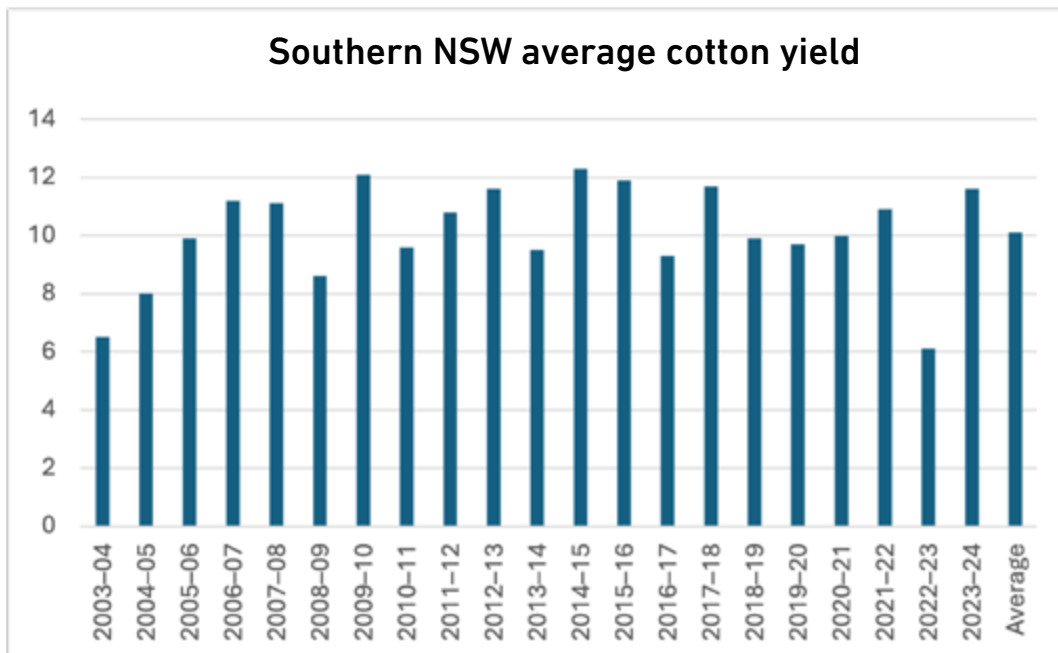
COTTON was the first row crop grown on Ravensworth Station at Hay and Kooba Station at Darlington Point. Yields of the first crops averaged 5 bales/ha. However, the cotton industry did not continue to develop mainly due to the lack of suitable varieties for the region and the seasonal rains during autumn, which were detrimental for cotton harvest.

Cotton returned to southern NSW in 1986–87, when 325 hectares was grown at Hillston. The growing of cotton was confined to the Lachlan Valley, around Hillston, for several seasons. It then expanded into the Murrumbidgee Valley in the early 1990s with cotton was grown around Darlington Point, and in 1999 there were large trial areas at Gundaline Station at Carrathool and at Lake Marimley north of Balranald.

A number of factors combined to see the large increase in the production area and the number of growers in the early 2010s. Prices for cotton and returns per megalitre have been good over a number of seasons, ginning capacity and agronomic support had increased, and cotton is one of the few crops that can be forward sold up to 3–4 years out.



Area of land (hectares) sown to cotton in southern NSW from 2004 to 2024



Average cotton yield (bales per hectare) in southern NSW from 2004 to 2024

Introduction of genetically modified cotton varieties to Australia – timeline

- 1996 – *Ingard® (Bt cotton)*
- 2000 – *Roundup Ready® cotton*
- 2004 – *Bollgard® II cotton*
- 2006 – *Roundup Ready Flex® cotton*
- 2017 – *Bollgard® III cotton*
- 2023 – *XtendFlex® cotton*

In recent years, the southern NSW cotton crop accounts for 15–20% of the total irrigated cotton in Australia. Growers in the south budget on yields of 10 bales/ha with many achieving farm averages of 11–13 bales/ha. Individual fields have reached yields of 16 to 17 bales/ha.

The cost of production for cotton is around \$4,500/ha and current gross returns are around \$7,600/ha, based on 10.3 bales/ha at \$650 /bale and seed price of \$350/t. Cotton consistently has one of the highest gross margin returns of broadacre crops.

Nearly all cotton grown in southern NSW is transgenic, providing gene technology in the plant for resistance to a major pest (*Helicoverpa* spp) and tolerance to herbicides (glyphosate, dicamba and glufosinate). Use of these technologies comes with industry-required resistance management plans to conserve the effectiveness of the technologies.

Looking back over the years it has been the genetic modification of cotton, in particular the Bollgard technology that has allowed cotton to be successfully grown in southern NSW with increased yields through early fruit retention and up to 90 % reduction in insecticide use.

The journey of cotton production in southern NSW from the 1960s to the present is a story of success. What began as research into a new crop for southern irrigators has evolved into a dynamic industry characterised by innovation. Technological advancements have empowered farmers to produce cotton more efficiently, sustainably, and responsibly. 🌞

Before his role with CottonInfo, Kieran O’Keeffe was the NSW DPI District Agronomist for Coleambally from 2002 to 2012, and before that an agronomy lecturer at Murrumbidgee College Yanco for 4 years and an Agriculture/Science high school teacher for 17 years. Currently, Kieran is the cotton industry representative on the IREC Executive Committee.

References

James Hill, '[Growing cotton in the south](#)', Proceedings of the Australian Cotton Conference 2008 (www.insidecotton.com/categories/2008-australian-cotton-conference)

The Australian Cotton Grower Yearbook, 2013 to 2023

[Bayer Crop Science Australia | Cotton](#)
(www.crop.bayer.com.au/crops/cotton)

[Bayer Crop Science Australia | Resistance Management Plans](#)
(www.crop.bayer.com.au/crops/cotton/resistance-management-and-stewardship-for-cotton-crops)



Cotton field day at Woodside farm, Benerembah, in the 1960s.

FARMERS' NEWSLETTER

Irrigation Research & Extension Committee

Private Mail Bag, C.S.I.R.O. Research Station
Griffith, 5 S., N.S.W., Australia
Phone: Griffith 1701 (Four Lines)

Registered at G.P.O., Sydney, for transmission by post as a periodical

Large Area 5A

Price 2/-

January 1966

COTTON SPECIAL



"The Role of Cotton Varieties in the South West Region of New South Wales":

PLENTY OF SCOPE FOR COTTON PRODUCTION IN THIS REGION



Mr Alistair Low, cotton breeder, on secondment from the Empire Cotton Growing Corporation, and now stationed at the C.S.I.R.O. Irrigation Research Laboratory, Griffith, has this to say after three months on the M.I.A.

Annually world cotton consumption rises 3-4% in spite of competition from other fibres. It is still by far the most important fibre, natural or man made, in the world. Cotton has three out of every 5lbs. of natural fibres or 1 out of every 2lbs. of all fibres. Thus there is plenty of scope for cotton production in this region especially as standards of living steadily increases throughout the world, creating a steady market for fibres suitable for semi-tropical and tropical regions. Although it can be argued that this region with its shorter growing period is better suited to small bodied, shorter stapled, earlier maturing varieties to meet Australian requirements in this range, the future export markets to S.E. Asia must not be overlooked.

CHOICE OF VARIETIES

SPINDLE PICKING? AND STRIPPER PICKING?

Now that cotton has been grown in this region for several years both commercially and experimentally, there is some data on what varieties could do to raise or stabilise yields. Choice of variety is always difficult when differences are not marked, as is the case at present, but several leading varietal groups are of particular interest, said Mr Low.

8

The Editor Talks to You:

COTTON OUTLOOK BRIGHTER



That there are problems associated with the production of Cotton in the South West Region no one would deny but to say they cannot be overcome would be refuted by a team of enthusiastic and dedicated workers belonging to the Department of Agriculture and C.S.I.R.O.

The combined programme being carried out by these two organisations, one a State and the other a Federal instrumentality, to assist the development of cotton in these areas, has the complete support of both organisations.

Co-operation on a person to person basis in the two organisations was achieved very early on. Knowledge, physical and material resources, have been pooled to ensure that no duplication of work would be undertaken.

Full co-ordination is being maintained as the work goes forward step by step.

Work in the field includes breeding and selection of new varieties, plant density trials, irrigation practice, weed control, pest and disease control and harvesting methods.

Laboratory work being carried out at C.S.I.R.O. Irrigation Research Laboratory, Griffith, is entirely devoted to testing the various cottons produced for length and length distribution of fibres, its strength and maturity, all physical properties that must be up to certain international standards if the spinners are to handle them.

Growers and potential growers of this crop may rest assured that the problems of the industry are being given top priority.

That a break through will be achieved nobody doubts, least of all those who like myself come in daily contact with this team of smiling, confident, research workers.

In conclusion may I wish all of you, whether you are cotton growers or otherwise, a bountiful season and a prosperous New Year.

They are Empire, Daltapine, Auburn, Coker and Rex for spindle picking; and Gregg Paymaster, Lockett, Lankart and the C A. "broad-cast" strains for stripper picking.

RANGE OF VARIETIES REDUCED TO TWO

It is essential however in my opinion that this wide range of varieties should be narrowed to two at the earliest opportunity, one for spindle and one for stripper picking.

Throughout the world varietal growths are established over the years which become known to the industry. For example PERUVIAN Tanguis, SUDAN Lambert, UGANDA BP52, PUNJAB 289P, SYRIAN Coker 100W; CALIFORNIAN Acala, and so on. As Australia's total production is only a fraction of the above growths, there is an urgency to identify this area with a growth which can provide enough running bales uniform enough to be of commercial use.

It is inevitable with variable climates such as experienced in this region, that varietal interactions with season can be high enough to confuse the picture, but until more data is available several varieties are likely to feature in this interim period. Provided however their qualities are similar, this should reduce the disadvantages as described earlier.

QUALITY AND YIELD BOTH NECESSARY

Mr Low went on to say that emphasis is generally placed on yield but quality is also vital. In this region fibre maturity is of particular importance. Too early a water cut off to force boll opening or cold spells delaying development, especially in later maturing varieties, could lead to a growth which will not find a ready market. A smaller yield of mature lint by using earlier maturing varieties could be a better proposition but all this is undergoing examination. Fibre testing and spinning tests are now available and sufficient facilities will be available in the near future as a result of the co-ordinated efforts of the Department of Agriculture and the C.S.I.R.O.

Finally, said Mr Low, in a search for higher yielding varieties, early maturity will be a pre-requisite to reduce the considerable hazards of establishment and maturing a crop for harvest in the colder months at each end of the season.

This variety could play an important role but there can be no doubt that agronomic practices, disease and pest control, are equally vital all of which must be dovetailed together to ensure success.

**YENDA PRODUCERS
CO-OPERATIVE**
"Your Partners in Farming"®

Celebrating
100 YEARS
in
2025

Yenda Producers have been supporting local farmers since 1925, delivering products and services to over 2,000 members.

Our expert staff provide exceptional advice and service in:

**Cartage | Fertiliser | Seeds | Spreading | Chemical
Fuels and Oils | Agronomy | Water Trading
Livestock Production | Horticulture | General Merchandise**

YENDA GROUP

**YENDA PRODUCERS
CO-OPERATIVE**
"Your Partners in Farming"®



RWE
YENDA PRODS IRRIGATION



yendaprods.com.au

YENDA

59-61 Mirrool Ave.
Yenda
02 6961 3300

LEETON

2 Canal St.
Leeton
02 6953 9000

GRIFFITH

577 Kidman Way,
Tharbogang
02 6966 8900

FRUIT & CASE

31-34 Yenda Pl,
Yenda
02 6968 1268

BARANDUDA

43 Muller St.
Baranduda
02 6020 9709

WANGARATTA

4 Mason St.
Wangaratta
03 5720 0445

CORRYONG

Agmate 33 Donaldson St.
Corryong
02 6076 1166

IRRIGATION RESEARCH AND EXTENSION COMMITTEE

FARMERS' NEWSLETTER

Registered for posting as a publication, Category (A).

LARGE AREA NO. 109

PRICE 30c

OCTOBER, 1978

Special Edition **SUMMER CROPS**

- CONTENTS:**
2. Sunflowers
 4. Soybean Varieties
 8. Irrigating Soybeans
 10. Sorghum
 13. Combine and Sunflowers
 16. Precision Planters
 20. Irrigation Layout Costs
 21. Pesticides Act

Connection between growers, advisors and researchers was the foundation of successful row cropping in the Murrumbidgee Valley, and the mission of IREC. John Sykes recalls the pioneers and legacy of row croppers from the 1970s.

FOUNDATION OF ROW CROPPING IN THE MURRUMBIDGEE VALLEY

John Sykes

Former Agronomist

The 1970s provided a unique decade for the development of summer crops in the Riverina and it ushered in new systems of farming that are used by cotton growers in the 2000s.

INITIALLY I was going to write about those summer crops, but it was the people – the growers – who were the foundation of modern-day irrigated summer crops.

I recall a group of extraordinary growers who pushed the limits for high yields. As individuals, they were thirsty for information and wanted to improve returns on every input. They ground truthed best management practices and laid out the basics for row cropping, even for the new cotton growers in the 2010s.

I hope you will remember names like Ian Merrylees, Martin Maynard, Alan Irvin, Jim Wilson, Bruce Gowrie-Smith, George Commins, researcher Dr Warren Muirhead and agronomist Nick Hutchins. They were some of my favourite growers and advisors.

They saw the failure of cotton in the 1960s, an abandoned gin, insect invasion, wrong varieties and difficult soils that were basically better suited to rice production, but they never gave up. They were clever and relished a challenge. They also liked being together, working on problem areas and continually questioning research.

Rising to new challenges

Maize and sunflowers were the favourite crops after the failure of cotton, which I always remembered as I would pass the old gin at Darlington Point on a weekly basis.

I learnt from Benerembah grower, Alan Irvin, that maize was trialled in 1966. Alan, along with George Commins of Darlington Point, put in the first crops in the region unknown to each other that they were doing this in parallel!

Row cropping attracted large area growers located outside the gazetted irrigation areas, who were not allowed to grow rice, and others who just liked the challenge to do something different.

Maize growers realised they could deal directly with end users, and so they set up on-farm storage and drying for optimal delivery. It was a good crop to grow, you could almost hear it grow as you walked into the field and it was a great source of income. Jim Wilson of Coleambally was at one stage was the biggest grower in NSW.

Sunflowers were similar to grow but different. The industry preferred polyunsaturated oil and the crop was intriguing. Dr Warren Muirhead from the CSIRO at Griffith researched the time of sowing and recommended early sowing to ensure oil quality and quantity. Ian Merrylees of Carrathool proved to be the perfect grower and won award after award.

This group of people advanced several areas of agronomy and crop production practices.

Water run urea

The growers realised they were not getting value for money on up-front spent nitrogen. After an initial discussion with Warren Muirhead they knew they had to get the nitrogen into the root zone. Water run urea was trialed and after one year 'the answer stood out'. Alan Irvin knew what to do to supply urea into irrigation water. They never looked back.

Irrigation methods

Irrigation methods for row cropping were continually refined. The growers started at a base of using syphons down the furrow. They adapted from red soils to grey clays, where bed farming improved soil structure and water infiltration. Where possible they reduced the labour requirements of using syphons, and eventually arrived at bankless channel systems and the ability to apply and remove large volumes of water – there are a lot of left over syphons!

Ground preparation

Bruce Gowrie-Smith of Darlington Point reminded me that initially they were amateurs. At first they inadvertently 'developed boulders to sow into by preparing rows in winter when it was too wet'. They soon changed field preparation to February/March, allowing the soil to mellow to gain better soil structure to sow into. They also had to contend with unsuitable sowing equipment and had to modify seeders or get locals to build new ones. It all got back to sowing on time and avoiding grain drying whenever possible.

Precision seeding

After increasing sowing width from two rows to four rows and striving for more precision placement, press wheels became critical on rows on beds. They were innovative with design and worked together to get the right system. Sharing of information was critical.

Insect control

Observation of the life cycle of heliothis saw refinement of chemical control. The idea of looking for eggs at tasseling and not grubs was critical. Genetic modification wasn't available but correct scouting for egg lay confirmed spray timing. Insect control in maize was critical.

Learning overseas and locally

There were other areas but what set this group apart was their questioning and search for big jumps in yield. Alan Irvin was the first to go to the USA and review maize hybrids in 1973. Bruce Gowrie-Smith and Jim Wilson went soon after (proud of their name cards that could be distributed in the USA) to see what was new in technology. Don't forget these men! They were the innovators that developed today's management practices of row crops, which has helped cotton to flourish more than 30 years later.

There are other stories that former Griffith District Agronomist, Mike Hedditch, can relay about early sunflowers in the MIA, led by Jack McFarlane and the Morseheads. And Coleambally District Agronomist in the 1990s, Don McCaffery, can relay about soybeans led by Peter Burrell (before his tragic death) and Vic Bellato and others in the CIA. There was always the need to address low water availability and using crops with lower water use than rice.

Why did I enjoy their company so much? These farmers taught me many things about crop management, the fundamentals to get right, identifying the challenges, how to assess and work on problems and how to ask for help. I liked being with these guys on our bus tours, to review the pre-season and to learn off each other. They were never satisfied, they shared their information – nothing was held back. It was a real privilege to work with such a great bunch of growers who challenged me to become a better agronomist. 🌄

John Sykes was the NSW Agriculture District Agronomist for Coleambally from 1974 to 1986. He moved to Dubbo and specialised in developing oilseed and pulse crops in NSW, and then became Director of Tamworth Agricultural Institute. He also spent seven years as a GRDC panel member, working nationally.

Good Prospects for Summer Grains, Oilseed and Protein Meal Crops

Nick Hutchins, Agricultural Consultant, Darlington Point

TRENDS IN PRICES FOR OILSEED AND PROTEIN MEAL CROPS

There has been a strong recovery in the outlook for commodity prices in grains, oilseed and pulse crops, over the past year. The much publicised USA drought has been a major contributing factor in bringing this about, but the trend was evident before the impact of the drought was felt. There are many factors which influence world commodity prices, such as exchange rates, world economic activity, weather patterns in the major producing countries, but in the final analysis it all boils down to supply and demand.

World stocks of protein meal oil and oilseed have been falling for some 18 months, and this has been reflected in the prices received. The following table documents the steady rise in the prices of soybeans, canola (rapeseed) and sunflower. All prices quoted are \$/tonne DIS Melbourne.

TABLE 1 - Price trends in oilseeds

MONTH	SOYBEAN \$	CANOLA \$	SUNFLOWER \$
June 1986	265.00	238.00	210.00
June 1987	320.00	245.00	250.00
June 1988	430.00	370.00	300.00

In the two year period between June 1986 and June 1988 soybean prices rose from \$265 to \$430 per tonne or just over 62 percent, canola prices have risen from \$238 to \$370 per tonne or just over 55 percent, while sunflower prices have risen from \$210 to \$300 or nearly 43 percent.

The demand for vegetable oil is strong, but the demand for protein meal is even stronger, as can be clearly seen in the above figures. There is also a strong demand for other protein meal crops such as peas, lupins and faba beans.

FUTURE PRICE TRENDS FOR OILSEED AND PROTEIN MEAL CROPS

Predicting future price movements is always risky and often futile, however, producers are expected to receive in the vicinity of \$400 to \$450 per tonne delivered Melbourne for their 1988/89 soybean crop, and around \$350 to \$380 per tonne for sunflowers, also on a delivered Melbourne basis.

As far as the winter oilseed and pulse crops are concerned, canola is expected to bring around \$370 to \$400 per tonne delivered Melbourne, while peas, lupins and faba beans are also expected to fetch high prices.

PRICE TRENDS AND FUTURE PREDICTION FOR SUMMER COARSE GRAINS

The glamour crops may be the protein meal crops, but grains have also been rising steadily in price. In 1987 corn was fetching around \$115 to \$125 per tonne on farm, while sorghum was sold for as little as \$85 per tonne, on farm. In 1988 corn fetched between \$135 and \$150 per tonne, with some sales higher, while sorghum sold for between \$95 and \$105 per tonne on farm. For the 1989 harvest waxy maize contracts have already been let at \$163 per tonne on farm, with the seed provided. It is being predicted that sorghum will sell for around \$130 to \$140 on farm basis.

Rice has shared in the resurgence, but to some extent for different reasons. The failure of the monsoons in Thailand and other producing countries created a shortage of rice and hence improved prices in 1988. It is not clear whether rice prices will improve again for the 1989 harvest season, or whether they will remain at much the same level as last year.

RENEWED INTEREST IN SUMMER CROPPING UNDER IRRIGATION

The improved outlook for summer grains and oilseed crops has brought with it a renewed interest in growing these crops during the 1988/89 season. This interest has increased with the excessively wet winter, and the consequent inability of some irrigators to sow their planned area of winter crops.

CAREFUL PLANNING NEEDED FOR SUMMER CROPPING

The wet winter will bring problems for summer croppers, making early land preparation difficult or, in some cases, impossible. The production of summer crops is a specialised business. To be successful, it is essential to sow on time and to pay attention to detail.

While anticipated profit will be the main factor considered when planning a cropping program which need to be taken into account requirements, soil types, irrigation machinery, labour, weed control, cost of grain driers, markets, contracts and the growers own skills and knowledge.

COMPARATIVE PROFITABILITY OF ALTERNATIVES

The following is a comparison of crops with good irrigation layouts, and good management. Prices are on an on-farm basis.

Farmers' Newsletter
PRODUCTION, IRRIGATION AND EXTENSION COMMITTEE

LUCERNE
King of Fodders

COMBINES - the "Achilles Heel" of Sunflowers

By: S.J. M. Sutherland
District Agronomist,
GUNNEDAH NSW 2380

I BELIEVE THAT THE MAJOR DRAWBACK TO THE SUNFLOWER INDUSTRY AT THIS STAGE IS THE INABILITY OF COMBINES TO SOW SUNFLOWERS IN THE DESIRED MANNER WHICH RESULTS IN AVERAGE YIELDS BEING SO LOW.

Quite obviously a list of other factors contribute to the final yield:

- Soil type
- Seasonal conditions
- Paddock preparation
- Weed control
- Insect and bird damage
- Harvest losses
- Sowing time
- Varietyetc.

Generally speaking farmers do a good job with most of the above factors - the paddock may be prepared to perfection, pre-emergent herbicide incorporated correctly and after all this, he is forced to scatter the seed into the soil with a combine.

Irrigation Layout and Earthmoving Costs

SURVEY/DESIGN	JULY 1978	
	QUOTE A \$/acre	QUOTE B \$/acre
(A) 100 foot grid survey staked at 500 foot intervals	5.00	3.50
Irrigation design including channels	2.00	2.00
Staking at 100 foot grid for cut and fill plus limited re survey	5.00	6.50
	<u>12.00</u>	<u>12.00</u>
OR		
(B) 100 foot grid survey, staked at survey	7.00	7.00
Irrigation design (major re design about \$1.50)	2.00	2.00
	<u>9.00</u>	<u>9.00</u>
PLUS		
(C) Optional blue top survey to re level after cut and fill but before peg removal, to indicate corrections	1.00	1.00
EARTH MOVING		
Field work - per cubic yard moved	\$0.38 to 0.42	0.40
- per hour for scraper		
22 yard	75.00	60.00
15 yard	50.00	40.00
Channels, roads, roughly costed per yard	0.25	0.30

TYPICAL IRRIGATION AREA SITUATION

Very few people do the "perfect" job on the plane of best fit: most compromise.

Current earthmoving expenditures range from \$45/acre for touch up, to \$110 per acre for better job with water recirculation. Most common current expenditure around \$80 per acre plus survey and design fees.

A NEW ACT - One which concerns us all

By: Bob Morrison,
District Agronomist,
BARELLAH NSW 2738

THE USE OF PESTICIDES IN AGRICULTURAL PRODUCTION IS MASSIVE, AND WITHOUT CLEAN APPLICATION WOULD NOT BE THE SUCCESSFUL INDUSTRY.

IN RECENT YEARS TECHNIQUES OF APPLICATION AND USE OF PESTICIDES HAVE IMPROVED AND THE NUMBER OF PRODUCTS AVAILABLE HAS GROWN TO GREAT PROPORTIONS.

Some of these pesticides are more toxic, if not used carefully.

In April this year the New South Wales Government passed an Act which placed heavy responsibility onto those involved with pesticide production and handling, including the farmer, retailer and user, the home gardener.

The Act is "The Pesticides Act 1978" and was introduced to replace the Pesticides Act, 1945.

What is a "Pesticide" under the Act?

The term "Pesticide" includes chemicals such as -

- Insecticides
- Fungicides
- Herbicides
- Disinfectants
- Ants

and others previously included in the old "Pesticides Act".

In addition, the new Act also controls the use of -
Plant Growth Regulators
Defoliant
Baiting herbicides and
Biocides

Precision Planter proves more accurate and increases yields

By: John Lacy,
District Agronomist,
FINLEY NSW 2713

SUNFLOWER TRIALS IN THE FINLEY DISTRICT HAVE DEMONSTRATED MORE UNIFORM PLANT STANDS FROM NODET PNEUMATIC PLANTERS.

IN ONE TRIAL A SUNFLOWER CROP PLANTED WITH A NODET PNEUMATIC PLANTER YIELDED 14% HIGHER THAN THAT SOWN WITH A COMBINE.

However, in another demonstration the yield obtained from a Nodet pneumatic planter was the same as that obtained from a Moorehouse Gyro planter.

Nodet pneumatic planters gave a much better plant distribution than that from combines. Moorehouse Gyro planters gave a plant distribution in between that obtained from the pneumatic planters and combines.

SORGHUM .. the old workhorse

By: Terry Davis,
District Agronomist,
Department of Agriculture,
GRIFFITH NSW 2680

SORGHUM IS A RUGGED CROP THAT WITHSTANDS MORE MIS-TREATMENT THAN OTHER SUMMER CROPS - IT IS THE ONLY ONE THAT WILL SURVIVE MEDIOCRE CONTOUR IRRIGATION.

However, the rising costs of production and non-rising sorghum prices have narrowed the profit margin so that no longer can sorghum growers be satisfied with low yields.

The old workhorse has been flogged to death.

How often do Soybeans need Irrigating ?

By: G. A. Thompson
Research Agronomist,
Senior Agricultural Research Officer,
DORTON NSW 2825

SOYBEAN YIELDS ARE INFLUENCED GREATLY BY IRRIGATION STATUS AND THE ACTUAL YIELDS OBTAINED WITH IRRIGATION IN 1977 AND 1978 ARE AS FOLLOWS:

The experiment was conducted at the Agricultural Research Station, Dorton, where a large amount of water is available for irrigation. The irrigation treatments were 0, 20 and 40 mm of pan evaporation per week compared. The several seasons have shown that frequent irrigation intervals has produced a 30% increase in yield.

“

I arrived at Yanco in March 1982 to start my career in agriculture, in irrigation for the first 20 years.

I am indebted to the rice industry, through the IREC, as well as the NSW Department of Agriculture for giving me a start. The IREC Large Area *Farmers' Newsletter* became the main reference in my office library.

As district agronomist for Coleambally I worked with all the innovative summer row croppers in the Murrumbidgee Valley that John Sykes refers to in his reflections article. Together we tackled a number of challenges – soil management and impacts of cultivation/bed or hill formation at the wrong soil moisture content, sustainable pest management and crop nutrition to name just a few.

IREC was the vehicle that lobbied for, and was successful in gaining funding for a number of targeted research projects, such as heliothis management in non-rice summer crops in the Murrumbidgee Valley. There are few, if any, agricultural organisations that have had the longevity of the IREC. Central to this is the commitment from growers, research and industry to work together to continuously improve irrigated agriculture to the level where we are today.

I understand that this edition marks a significant milestone for the *Farmers' Newsletter*. I congratulate all past and present contributors to the newsletter – there are many.

If anyone was to look back on the achievements of the IREC and the issues covered by the newsletter over the past 80 years, one can see why we are, where we are, today in the irrigation industry in the Riverina. Thank you.

Don McCaffery

District Agronomist, Coleambally 1989–2002

Technical Specialist (Pulses and Oilseeds) NSW DPI 2002–2022

”



Kindee - North Star NSW, 9000ha, Wheat, Cotton, Barley, Sorghum, Canola, Lava beans, Chickpeas.

Noongaburra - Hay NSW, 6150ha, Wheat, Cotton, Barley, Canola, Chickpeas.

Sunnycrest - Deervale NSW, 82ha, Avocado, Kiwifruit, Hay.

Glenrown Station - Boggebri NSW, 11,200ha, Cotton, Wheat, Summer cropping, Trade cattle, Breeding cattle.

Merrowie Station - Hillston NSW, 32,730ha (9,906ha developed irrigation), Cotton, Cattle, Nuts.

Uri Park/Talinga - Darlington Point NSW, 4,000ha, Cotton, Wheat, Hi-density trellised mandarins, Pistachios, Almonds

Moonbi - Young NSW, 850ha, Cereals, Oil seeds, Pulses, Cattle

Sunland - Hillston NSW, 1,747ha, Cotton, Wheat, Beetroot, Sweet Corn

Blackbull Station - Katherine NT, 15,000ha, Cattle (grain-fed/grass-fed)

Mount Hope - Vanuatu, 5,000ha, Organic beef



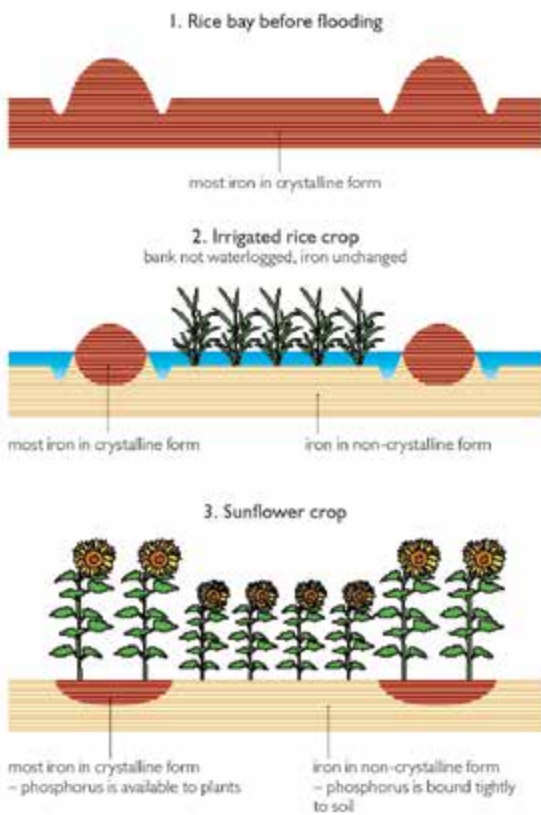
Interested in a career in
Agriculture?

Phone - 02 6750 9222
Email - admin@cfma.com.au
www.customisedfarmmanagement.com.au





Poor growth of a summer crop planted after rice into a reworked contour layout. Rice stubble disorder was identified as the cause. This photo was taken in the 1970s by Warren Muirhead.



1. Most of the iron oxides in the soil are in the crystalline form before the rice bay is flooded. 2. During the rice crop most of the iron in the bays goes into solution but the iron in the bank remains in the crystalline form. 3. When the bays are drained, soil iron changes to the non-crystalline form that tightly binds phosphorus. Diagram and caption adapted from an article by Warren Muirhead 'Rice stubble disorder', *Ricemill News*, June 1981.

While there are logistical advantages of growing row crops on beds in rice layouts, there are some soil chemistry issues to take into consideration—rice stubble disorder, in particular.

Rice stubble disorder

Research during the 1970s and 80s highlighted a problem known as rice stubble disorder. The work reported by scientist Dr. Warren Muirhead, based at the Griffith CSIRO laboratory, showed that after a rice crop, soil phosphorus is less available to subsequent crops. This is because re-aeration of the rice field after flooding causes phosphorus to become tightly bound to non-crystalline forms of iron oxides; whereas in soils that remain aerated, phosphorus is bound to crystalline iron oxide and is readily available to plants.

Crops affected by rice stubble disorder include maize, cotton, sunflowers, sorghum, canola and faba beans. Soybeans are affected to a lesser extent than other summer crops, and winter cereals generally are not affected at all.

Rice stubble disorder (also called phosphorus tie-up) is most clearly observed when the irrigation layout is redesigned after rice. Crop growth on old bank lines (where the soil remained aerated) is unaffected, whereas crop growth in the main parts of the field is poor.

Cotton after rice

Rice fields are selected due to the heavy impermeable nature of their soil types, and in many cases these soils have low pH values. This is in contrast to row crops such as cotton and maize that require good drainage and have pH requirements in the range of 5.5 to 7.0 (CaCl₂). In many cases, the soil characteristics of typical rice paddocks may not translate to good soils for row crops.

A number of cotton crops in the 2013–14 season have had poor growth if rice was grown as the previous crop in the paddock. Leaf and soil tests have confirmed low phosphorus levels in the soil and in the cotton plants. The pH levels (CaCl₂) were in the range of 4.4–4.7, which is too low for row crops.

There are other factors at play that will cause poor growth of row crops on rice soils, and these need further investigation.

Soil compaction restricts root growth in row crops and the paddock will need deep ripping to open up compaction layers. All farming systems will cause soil compaction, especially when there is a combination of wet soils and heavy harvesting machinery.

Alleopathy, where chemicals exuded from the previous crop impede germination and growth of a subsequent crop, could be part of the cause. In addition, crops such as cotton have a high dependency on vesicular arbuscular mycorrhizal (VAM) fungi for good growth, VAM levels would be lower when the field initially comes out of the rice system. When phosphorus is initially low, the dependence of phosphorus is increased.

Plan the conversion

If row crops are to be established careful management is needed.

no 190, autumn 2014

farmers' newsletter

large area 400 pages

“

It gives me great pleasure to acknowledge the important contribution that the *Farmers' Newsletter* has made to making the irrigation community aware of my research and hopefully leading to the adoption of more efficient practices. The editorial staff of the newsletter does a great job in making these articles more 'farmer friendly'.

Also, congratulations to the *Farmers' Newsletter* for surviving 80 years. This has been driven by the dedication of the staff of IREC and other agencies, and their willingness to adopt change.

A survey carried out several years ago by Tony Dunn of Charles Sturt University, with help from CSIRO and Coleambally Irrigation staff, showed that Coleambally irrigators' main source of technical information and innovation was the *Farmers' Newsletter*.

Best wishes for the next 80 years.

Dr Warren Muirhead

Former Research Scientist, CSIRO Griffith
IREC Lifetime Achievement Award recipient

”

MAKE THE MOST OF EVERY HECTARE

Shifting soils can create significant variability in agricultural landscapes. By implementing effective strategies tailored to your farm, Precision Ag can help improve the overall health of your paddocks.



Increase profitability by managing your soil variability



Data driven decisions

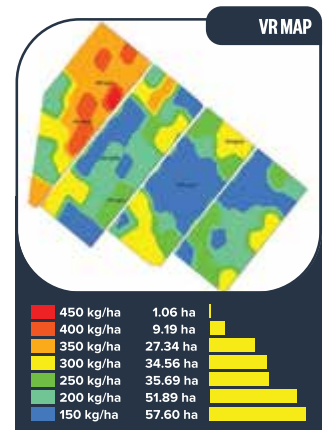
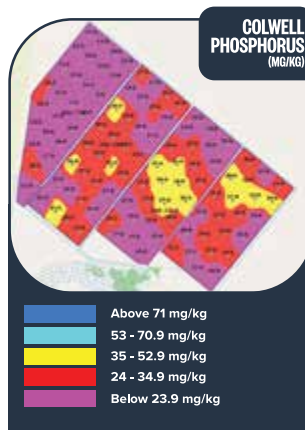


Independent advice tailored to your farm

FARMER TESTIMONIAL

“ I CAN'T FAULT PRECISION AG'S SOIL SAMPLING ”

“I can't fault Precision Ag's soil sampling. It showed we had a build up of phosphorus and soil acidity we didn't realise we had or thought we would have. This hadn't been picked up in any previous soil surveys. With this high quality and detailed information, we are only putting out MAP where it is needed most. No assumptions, no waste!”



BOOK YOUR FREE ASSESSMENT TODAY

1800 773 247

precisionag.earth

precision ag



Established in the 1920s, the prune industry of the Murrumbidgee Valley has seen all sorts of challenges to its existence. The *Farmers' Newsletter* has reported on these issues and potential solutions through the decades, as the industry continues to embrace new technology to succeed.

TECHNOLOGY TRANSFORMS THINNING DECISIONS

Paula Smith
AusPrunes

Forty years ago, Hanwood orchardist Roy Sainty wrote of the importance of thinning fruit on prune trees to improve fruit size and quality.

IN an article published in *Farmers' Newsletter*, Horticulture Edition No. 160, June 1984, Roy wrote "Judicious and regular pruning is the most important management practice that will regulate cropping and improve fruit size".

Roy outlined the benefits of thinning. "As with dormant pruning, fruit thinning allows for more leaves per fruit with all the subsequent effects that pruning gives. Although fruit thinning is not a substitute for regular pruning, it helps in orchards where pruning is not done to the extent that it should."

Chairman of the Australian Prune Industry Association, Michael Zalunardo, said that message was just as relevant today.

"There is simply no money in growing small prunes. Every attempt must be made to regulate crop loads and increase fruit size and quality if we are to continue farming," Michael said.

"In recent years we have seen the global prune market move towards pitted products. Small fruit are not suitable for pitting and it is increasingly difficult to find a buyer for this fruit. As a consequence, the prices for small fruit are low and often not sustainable for growers."

Roy Sainty's article from 1984 introduces the idea of mechanical thinning, saying that "all trunk shakers have been found to be satisfactory in California ... and there should be no reason that current harvesters in the MIA could not, with some alterations of shaker weights, thin the crop if considered necessary or desirable."

Since then, tree shakers have been routinely used to thin crops to manage crop load and fruit size, but there is still some hesitation. Knowing how much to thin presents a huge dilemma for growers. There is always the fear that thinning too heavily, may also mean thinning profits.

Roy noted that "Even the most experienced growers have difficulty in assessing the crop load early in the growing season." The methods to do so were/are time-consuming and use a small sample size and often involve stripping the tree to count fruit and thus removing potential profits.

Crop load assessment made easier

There are now new technologies to assess the crop load quickly and more accurately and make the decision-making easier, however Michael said there are many reasons for slow adoption, including:

- growers are unfamiliar with the technologies that are available
- new technology is costly to implement, and is usually an up-front cost
- scepticism about thinning (and the lack of hard data in prunes)
- some growers opt to 'roll the dice' and hope that natural thinning will be sufficient.

A system called Cartographer, developed by Green Atlas, combines mobile hardware and a software platform to simultaneously count/scan the number of visible flowers, fruit and nuts in each tree (using computer vision) while also building three-dimensional models of those trees (using LiDAR). The technology was trialed in Australian prune orchards in 2022 as part of the Agrifutures Australia's Producer Technology Uptake Program.

Michael had two scanning runs conducted at his property during the trial, one pre-thinning and the other, four weeks after thinning, to see the effects. He said the scanning was completed relatively quickly and easily.

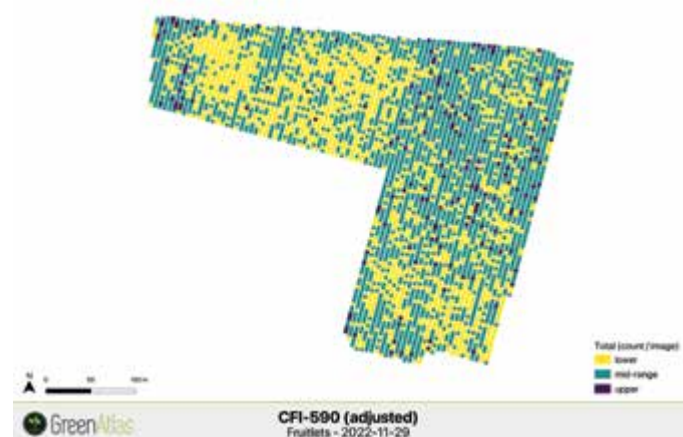
“An all-terrain vehicle (ATV) fitted with the scanning unit drove along the orchard rows at high speed to collect the data which was uploaded into the Cartographer processing unit and precise spatial density maps produced.

“The initial scan confirmed high variability between the trees with some trees in the patch showing a fruit count of 6,000 and some 12,000.

“We shook those trees with the extra fruit a bit longer than the rest, and the post-thinning scan definitely showed a more even fruit distribution throughout the block.

“The post-thinning scan has produced a map with a lot more yellow colouring, and a lot less of the navy coloured, heavily laden trees. It shows we could have thinned the right-hand corner a little harder.”

The trial outcomes were seen to be very positive and Michael said growers have continued to use the software to help validate their thinning decisions. 🌤️



Pre-thinning scans (top) at Michael Zalunardo’s block in Bilbul show a large proportion of heavily laden trees on the right-hand side. Following the thinning advice, the post-thinning scan (bottom) shows a much more even distribution of fruit density per tree.

Bidgee Automation Pty Ltd

Save Time
Save Water
Save Money



Bidgee Automation specialises in innovative automation solutions for your business.

- Winch doors and slide doors
- Diesel and electric pump stations

Contact us today to discuss a system tailored to suit your needs

Guiseppe - 0407 556 210
Andrew - 0488 762 335



PRUNE FRUIT SIZE AND CROP THINNING

Roy Sainty,
Orchardist,
HANWOOD NSW 2680

PRUNE TREES IN THE M.I.A. OCCASIONALLY SET VERY HEAVY CROPS OF FRUIT. THIS HAS BEEN PARTICULARLY SO IN THE LAST TWO SEASONS. IN THIS ARTICLE ROY SAINTY EXPLAINS HOW PRUNING AND THINNING TREES CAN IMPROVE FRUIT SIZE AND QUALITY.

In most cases the trees cannot carry the heavy loads, which results in:

- . limb breakage
- . poor tree growth resulting in a tendency to alternate bearing
- . small fruit with a high proportion of undersized and unsaleable fruit.
- . lower soluble solids content causing high drying ratios and poor quality.

No doubt environmental factors play an important part in creating this very heavy fruit set but good orchard management can alleviate the problem.

PRUNING

Judicious and regular pruning is the most important management practice that will regulate cropping and improve fruit size. Its main benefit is the promotion of new growth and the increased leaf to fruit ration which improves soluble solids accumulation as well as fruit size.

Reduced limb breakage and improved tree shape also enhance production over many years.

Growers in past seasons have attempted to overcropping problems, particularly limb breakage, by or lopping overhanging limbs, particularly of young trees of course does not solve the small fruit and quality problems.



50th Anniversary Dinner

50 years serving the irrigation community of southern NSW was celebrated by Irrigated Research and Extension Committee during 1997.

The highlight of the celebrations was a anniversary dinner held at the Griffith Ex-Servicemen's Club on Wednesday, October 22.

Special guest during the evening included well known rural commentator Neil Inall, and former IREC chairmen Roy Sainty and Doug Sutherland.

Our cameraman captured the following people enjoying the evening.



Pic 1.



Pic 2.



Pic 3.



Pic 4.



Pic 5.



Pic 6.

Pic 1: Guest speaker and well known rural commentator Neil Inall with Hanwood grape grower Louis Dal Nevo, and Rosemary Hutchins, Darlington Point.

Pic 2: Murrumbidgee Irrigation general manager Cedric Hoare with Nick Wragge, Gundalaine Station, and the Winegrapes Marketing Board executive officer Fiona Myers.

Pic 3: The Chairmen - Former IREC chairmen Doug Sutherland, Alstonville and Roy Sainty, Hanwood with current chairman Nick Hutchins (centre) at the 50th anniversary celebrations.

Pic 4: IREC administrative officer Nell Snaidero and the chairman of the Summer Crop committee Kim Russell enjoying a chat after the anniversary dinner.

Pic 5: Agripolitician Graham Blight, Whitton, makes a point while the chairman of Coleambally Irrigation, Alan Wray, looks on.

Pic 6: NSW agriculture horticulturist Harry Creecy talks with Tom Condon, Yenda during the IREC Anniversary dinner.





irribiz

Irribiz provides world class water solutions that help our customers conserve, reuse, and recycle water in the most efficient and sustainable way.

- 💧 RESIDENTIAL & COMMERCIAL IRRIGATION
- 💧 IRRIGATION ADVICE & DESIGN
- 💧 CONTROLLED ENVIRONMENT AGRICULTURE
- 💧 GREENHOUSE FIT-OUT SOLUTIONS
- 💧 PUMP STATION & FIELD UPGRADES
- 💧 IRRIGATION MAINTENANCE & REPAIRS
- 💧 RETAIL BRANCH & ONLINE SALES



Australia-wide

irribiz.com.au | 1300 477 424



IRRIGATION RESEARCH AND EXTENSION COMMITTEE

FARMERS' **NEWSLETTER**

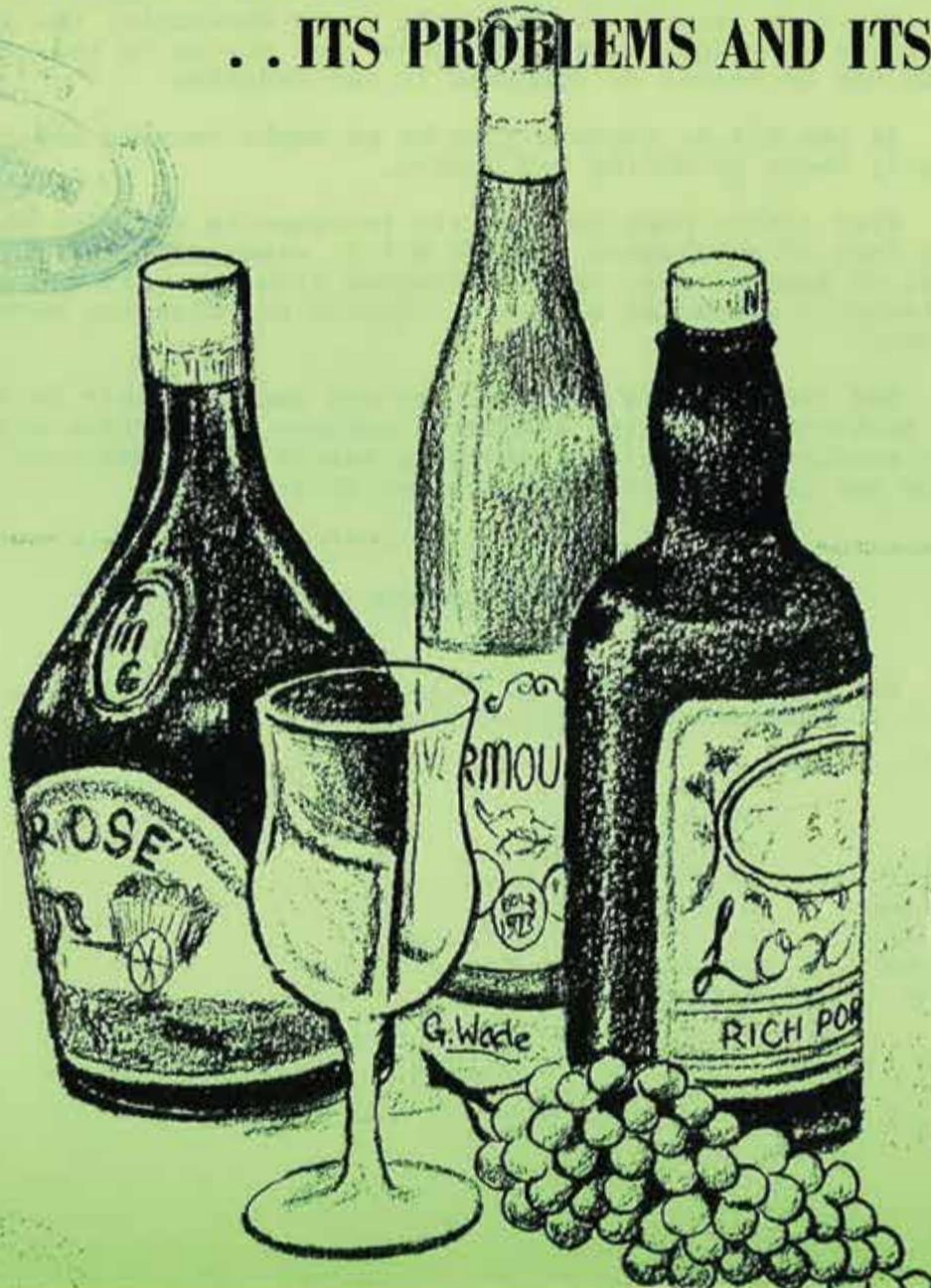
Registered for posting as a publication, Category (A).

No. 140

PRICE 30c

SEPTEMBER, 1978

Special Edition **THE M.I.A. WINE GRAPES INDUSTRY
.. ITS PROBLEMS AND ITS FUTURE**



The Riverina wine growing region is the second largest wine growing area in Australia and the largest in NSW. The wine grape industry of the Murrumbidgee Irrigation Area has a long association with IREC and the *Farmers' Newsletter*.

A NATURAL ADVANTAGE

Les Worland

Inaugural Riverina Legend
Public Relations, Education and Training, Casella Family Brands

The Riverina region is a powerhouse for grape production in New South Wales, known for its commitment to sustainable practices and innovative technologies.

WITH abundant sunshine and reliable and high-quality water resources, Riverina vignerons are well-positioned to produce top-tier grapes that meet market demands, and contribute to approximately 18% of Australia's national grape crush, with an impressive average output of around 180,000 tonnes each year.

A strong wine industry has also encouraged the establishment of ancillary industries in the region, building the MIA into a vibrant economic regional centre.

Grapes in the Riverina

Grapes were first planted in the Murrumbidgee Irrigation Area at the Yanco Experimental Farm in 1908, and subsequently on blocks in the Yanco No. 1 district as irrigated farm leaseholds were issued in 1912.

In 1913, when irrigation water became available in the Mirrool No. 1 district, John James McWilliam and his son Jack (LJR) were granted leaseholds. They arrived at Hanwood in the spring of 1913 from their "Markview" winery at Junee and in July 2014 started planting 35,000 vine cuttings on 60 acres on Farms 130 and 133. They also planted orange trees and 35 acres of wheat.

Records of the Water Conservation and Irrigation Commission for both the Yanco and Mirrool areas show that by 1914 there was around 500 acres of vines planted (for wine and fruit) and by 1917 this had expanded to 1100 acres, of which 700 acres were still non-bearing. The NSW State statistician recorded the first vintage for wine in 1916.

By the late 1920s, JJ McWilliam and Sons was the state's leading wine producer, having established their Hanwood winery in 1917. Other wineries were also being established in the MIA. Penfolds Wines built a winery in time for the 1921 vintage and McWilliams established another at Yenda in 1922. By 1925 there was a cooperative winery operating at Mirrool and in 1926, the Jones Brothers established a winery at Beelbangerera.

Developing the character of an irrigation area

In the early years farms were held in perpetual lease and a person could only hold one irrigation farm. Farms were divided into two categories – horticulture and large area. Horticulture was only permitted on land with a high security water allocation.

Under the closer settlement policies of the governments that created the MIA at the turn of the century, ownership was restricted to family enterprises to the extent that corporations were prohibited from owning land and individual holdings were limited to the size of a 'home maintenance area'. A home maintenance area was defined as the area of land that would comfortably support a family unit comprising a man, woman and children. In July 1997, state government policy changed, allowing corporations to own land within the MIA.

Steady development of the MIA occurred from the 1920s through to the 1940s, particularly in the period immediately after both World Wars. Soldier settlement schemes were established, however conditions were difficult and the early years of enthusiasm waned, and there was a lack of government support or technical assistance. Most settlers were forced to abandon their farms in poverty by the end of the 1920s. The lack of support for farmers was eventually addressed by the establishment of the Irrigation Research and Extension Committee (IREC) in 1939.

The Great Depression of the 1930s accelerated the challenges for establishing irrigators. The end of World War II saw a flood of Italian migrants arrive in the district and take up the available farms at bargain prices. The new wave of farmers carried generations of farming experience and in many cases, a tradition of winemaking. The result is that today, over 50% of the population of the MIA is either Italian born or of Italian descent.

Many vineyards today remain as small family holdings of about 20 hectares, where other horticultural crops are also produced. Corporate vineyard developments are typically 75–100 hectares and the largest is almost 600 hectares.

Highs and lows of grape production

Production increased slowly at first (4,500 tonnes in 1930 to 22,000 tonnes in 1947) but expanded considerably in the 1960s and reached 74,810 tonnes in 1982.

The first surplus of grapes was experienced in 1928, which led to the establishment of more wineries in the area and the formation of the Australian Wine Board, to coordinate and develop an export trade. As the industry continued to grow, the Wine Grapes Marketing Board was formed in 1932 to act as a price negotiator for growers and manage the ongoing local surplus production.

Surplus grape production was a problem through the 1950s, particularly red grapes, due to failing exports, decreasing consumption of fortified wine and increasing production of beer. By the mid-50s, red grape varieties were being removed from vineyards. A surplus of white grapes commenced at the end of the 1960s.

In the 1960s the IREC Planting Advisory Sub-Committee was instituted to provide industry recommendations on plantings. The mid-1960s saw a significant increase in the demand for red wine and so began a dramatic increase in plantings of red varieties, which precipitated another supply by the late 1970s.

In the 1980s, local wineries began to promote the Riverina as a general wine production region and in 1987, the Wines of the Riverina Promotions Committee was formed with local irrigation engineer and wine enthusiast Les Worland, as its inaugural Chairman. The Committee is now the Riverina Winemakers Association.

In the 1990s, a combination of improved viticultural and winemaking technology, better transport and distribution, together with a high quality, consistent, well-priced product, made Australian wine an international success.

Innovation and ingenuity in supporting industries

Widespread waterlogging and salinity increased in the 1950s due to prolonged rainfall over several years. Serious drainage problems culminated with inefficient irrigation and water use, and the 1956 flood. In 1952 a farmer organisation – the District Council of Extension Groups – approached the NSW Minister of Conservation and under his authority, the Tile Drainage Committee was formed. The Committee included research workers, bankers, farmers and representatives of government departments.

In 1963, Agricultural and General Engineering (A&G) was established in Griffith. A specialist in stainless steel winery equipment, A&G sold their products both in Australia and overseas. They developed the 'Potter Fermenter' named after the company founder Ron Potter, an engineer and winemaker. It was a patented multi-purpose stainless steel tank with a conical base, which revolutionised fermentation techniques in the early 1970s.

Some early experiments to increase the quality of fruit included late and double pruning. The objective was to delay ripening until the cooler autumn months. Although some results were impressive, the subsequent yield reductions of 50% with late pruning and 90% with double pruning, made these practices uneconomic.

Griffith grape grower and contractor, Wally Pilosio initiated mechanical harvesting in the region in 1974. This was a gamechanger for grape growers – reducing the labour requirement for harvest and increasing timeliness of harvest. Further developments followed, including night harvesting for wineries to process fruit at cooler temperatures. With machine harvesting, the dense canopies, and small grape clusters, which result from reduced levels of pruning, were no longer a problem.

Other developments to vine management included machine pruning, also established by Wally Pilosio, using saws set up on his Chisolm Ryder harvester. Although mechanical pruning usually required a follow up manual trim to streamline the overall result.

The increasing mechanisation of vineyard operations enabled vineyards to become steadily larger, with economies of scale becoming increasingly apparent.

Innovation in viticulture

The Mirrool Viticultural Nursery was established in the Griffith area by the NSW Department of Agriculture in 1916. At this time, the Water Conservation and Irrigation Commission also established its own nursery known as the Mirrool Nursery. The two nurseries were responsible for supplying trees and vines for most of the early settlement of the MIA. The first vines planted by the Department in 1916 were Grenache and Black Shiraz.

The Viticulture Nursery of 1916 has evolved to today's Griffith Centre for Irrigated Agriculture, which is the base for advisory and research staff of the NSW Department of Primary Industries.

Grape yields have increased greatly over the years due to several factors:

- better clones becoming available
- selection of virus-free planting material
- introduction of the Patterson under-vine plough
- use of fertilisers not previously approved by the Department of Agriculture
- recent introduction of phylloxera-resistant rootstock, such as Ramsay and Schwartzmann.

The original flood irrigation system for vineyards has undergone significant modifications since its inception. Key advancements have included tile drainage of the 1950s, laser leveling, Riverina twin furrow watering, regulated deficit irrigation and partial root zone drying. Innovations such as comprehensive farm designs, on-farm recycling of drainage and stormwater, drip irrigation and automated dripper systems have minimised water wastage. Growers have also adopted advanced production management techniques like trellising and fertigation, all of which have improved on-farm efficiency and grape quality.

The combination of natural advantages, innovative irrigation and technology practices and industry organisation solidifies the Riverina as a leading grape-growing region in Australia. 🌅

Les Worland has made a career of championing the Riverina wine region. He has worked with several wineries and in multiple roles in training, promotion and public relations. Les was President of the Riverina Winemakers Association for a decade and has supported the Griffith Wine Show for 30 years.



CROWN ANALYTICAL SERVICES
Disease & Nutrition Testing Specialists
www.crownanalytical.com.au

MOREE **GRIFFITH**

3 Frome Street, 381 Banna Ave,

Rob Long (Director - Moree Office)
Mob: 0428 971 751
Email: rob@crownanalytical.com.au

Jake Johnstone (Griffith Office)
Mob: 0437 996 678
Email: jake@crownanalytical.com.au

Testing For:

- Black Root Rot
- Verticillium Wilt
 - Defoliating Strain
 - Non-Defoliating Strain
- Arbuscular Mycorrhizae Fungi (AMF)

INTRODUCTION

(by Peter Davey,
District Horticulturist,
Department of Agriculture,
GRIFFITH NSW 2680)

The current wine and grape surplus is a serious nation-wide problem which will not disappear overnight.

Given normal yields, present areas and present sales, surpluses facing the grape growing and winemaking industry will probably exist at least into the early 1980's.

In other states, particularly South Australia, the impact of the surplus on grape growers has been very severe to the point where some may be unable to continue in the industry.

In the M.I.A. growers have by no means escaped the problem particularly those producing red grapes.

With little hope of dramatic increase in red wine sales and a growing lack of confidence amongst M.I.A. winegrape growers, the Department of Agriculture, in co-operation with the wine and grape growing industry conducted a special "Search and Planning Workshop" during June.

For two days all industry sectors came together to define the real problems facing the industry, explore alternative actions to reduce production surpluses and help ensure that producers really understood and felt committed to any decision taken.

WORKSHOP PARTICIPANTS

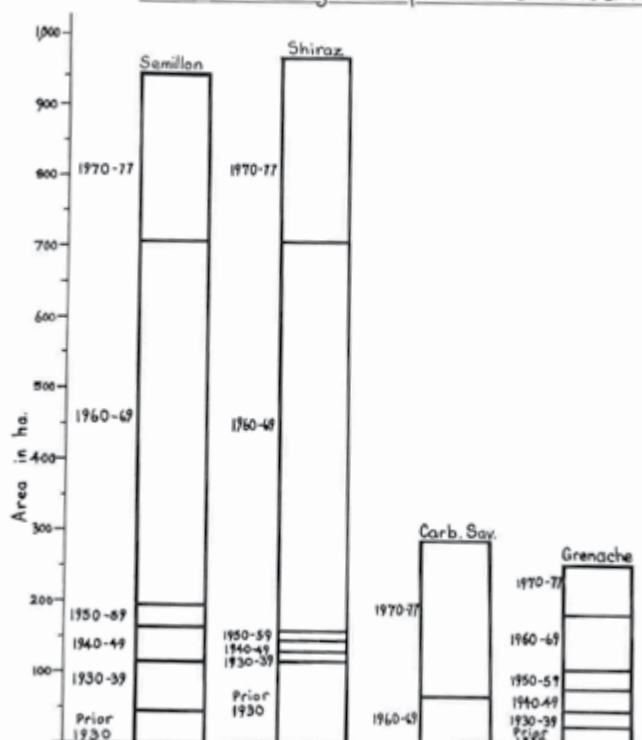
My thanks go to the following people for their time, experience and enthusiastic participation.

WINEMAKERS

A. Craig	Orlando Wines
R. Blake	Wynvale Wines
D. DeBortoli	De Bortoli's Wines
K. McWilliam	McWilliams Wines
L. Salvestrin	St. Peters Distillery
S. Aliprandi	San Bernadino Wines
J. Miranda	Miranda Wines

Farmers' Newsletter, Horticulture No. 140,
September 1978

Age Distribution of Four M.I.A. Varieties
in Ten Year Age Groups From 1930 to 1977



Re-plant with Quality Grapevines

Harry Creecy, District Horticulturist, NSW Department of Agriculture, Griffith.

"A poor vine costs as much to grow as a good vine."

This was the message from the MIA Vine Improvement Centre Chairman, Lou Cremasco. He said there were excellent opportunities for growers to increase their fruit quality and yields through planting improved grapevine material.

OPPORTUNITIES FOR VINEYARD IMPROVEMENT

Nurseries have vine rootlings grown from approved grape vine material for sale, these cuttings being labelled accordingly.

Cuttings from Department of Agriculture approved sources will again be available to growers and nurseries intending to raise rootlings for their own use or for sale.

Many MIA grape growers are not taking advantage of the availability of high yielding selected grape vine planting material, with the majority of the one million cuttings sold annually going to growers and nursery men outside the area.

They are missing out on excellent opportunities to plant improved grapevine material with most clones yielding 20 percent higher than the district average. Over the life of a vineyard this can add up to a very large quantity of grapes.

For example, in the 20 year life of a one hectare vineyard (cropping for 17 years), which yields 20 t/ha (8t/acre), with unselected plant material, the total yield would be 340 tonnes. With the vineyard planted to selected material this would amount to 408 tonnes, an increase of over three extra crops in the life of the vineyard.

VINE IMPROVEMENT SOCIETY

The vine improvement society was formed to improve the selection of grapevines, arrange for importation of improved vines and promote the use of improved grapevine material by involving people from the wine grape growers associations, nurseries, wineries and the Department of Agriculture.

Grapegrowers and nurserymen who require grapevine cuttings from the improvement society should place orders before Saturday, April 30, 1988.

Official order forms are available from the Department of Agriculture offices in the MIA and the Wine Grape Marketing Board.

COST OF CUTTINGS

The cost of cuttings of fruiting varieties of wine grapes and table grapes will be \$55 per 1000 cuttings. The cost for standard cuttings of grape clonal material from the MIA Vine Improvement Society is less than material from other states.

The cost of smaller numbers of cuttings is included in Table 1.

Forms should be returned by April 30 to:
MIA Vine Improvement Society,
PO Box 167, Yenda NSW 2681

STANDARD CUTTINGS OF WINE & TABLE GRAPES		
50	cuttings or less	\$20
200		\$32
400		\$40
600		\$45
1000		\$55
ROOTSTOCK CUTTINGS		
100	cuttings	\$21

Late orders for cuttings will not receive any priority in sales and, if the material required is available, the purchase will cost an extra 15-30 percent.

A fifty percent deposit is required with all orders for cuttings. Further information about ordering is available with the order forms.



“

I have several copies of the *Farmers' Newsletter* from the 1970s, issues mostly concerned with horticultural crops. For example, the March 1977 issue included the topics – Citrus Harvesting Aids, Mechanical Onion Harvesting, Tile Drainage, and Wine Grapes Outlook.

At this time the newsletter discussed problems of horticultural and agriculture crop production, and included articles giving growers an insight into research relevant to crop production. It was a means of extending the current knowledge of crop production to growers in the MIA. As its title suggests it was a 'newsletter', and no doubt good value at 30c.

As a researcher in citrus, it was a means for communicating practical results from research.

Dr Gerald Moss

CSIRO Irrigation Research 1966 to 1987

”

“

Eighty years of the *Farmers' Newsletter* contain the history of agricultural research in the MIA. Into the future, the newsletter will continue to provide advice and information to the community.

Dr Barrie Steer

Research Scientist, CSIRO Griffith

”

Agribusiness BORN & BRED

That's why we're Australia's
Most Recommended
Agribusiness Bank 2024*



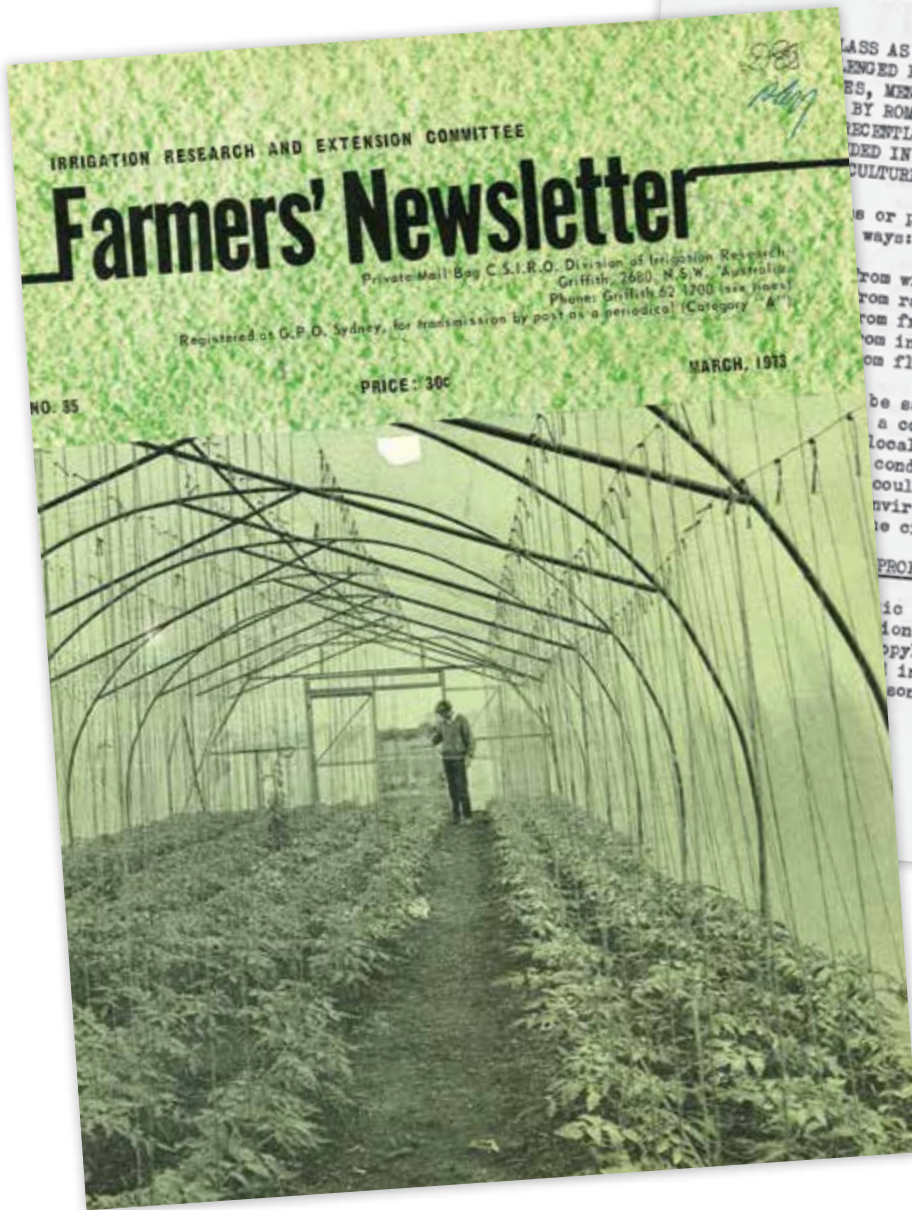
Call your local Rabo Griffith team

☎ 6969 7700

Rabobank



*RFI 2024 Global's Banking & Finance Awards identify the leading financial services brands in business banking, consumer banking, financial products and insurance. Unlike other awards programmes, winners are determined by customers. Based on data from Australia's largest financial services study, Atlas.



A PLASTIC HOUSE FOR THE PRODUCTION OF OUT OF SEASON CROPS

J. BLACKWELL & K. V. GARZOLI,
CSIRO DIVISION OF IRRIGATION RESEARCH

GLASS AS A PROTECTIVE COVER FOR PLANTS HAS HELD AN UNCHALLENGED POSITION IN THE WORLD OF HORTICULTURE FOR CENTURIES, MENTION HAVING BEEN MADE OF ITS USE FOR THIS PURPOSE BY ROMAN INVADERS OF BRITAIN. IT WAS NOT UNTIL RECENTLY, WITH THE ADVENT OF PLASTICS WHICH COULD BE PRODUCED IN WIDE SEAMLESS SHEETS THAT GLASS' POSITION AS A PROTECTIVE COVER HAS BEEN CHALLENGED.

Plastic or plastic greenhouses protect plants in the following ways:-

- 1. Protection from winds.
- 2. Protection from rain, hail and or snow.
- 3. Protection from frosts or low temperatures.
- 4. Protection from insects and birds.
- 5. Protection from fluctuating temperatures.

It can be said that the greenhouse be it plastic or glass is a controlled environment conducive to plant growth in any locality or season where the climate may be otherwise not conducive to plant growth. In an area where the climate could grow reasonably well the greenhouse environment which is ideal for optimum growth of the crop concerned.

PROPERTIES OF GLASS AND PLASTIC

Plastic materials lend themselves to greenhouse construction among them Polyvinyl Chloride (P.V.C), Polypropylene, Polyethylene. Of these Polyethylene is used in 80% of plastic greenhouses in the world. The reasons for its choice are twofold.

4

*Farmers' Newsletter, Large Area
No. 85, March 1973*

“

The *Farmers' Newsletter* is a tremendous boon to both farmers and researchers. It was in the vanguard of farmer-researcher interaction and has resulted in many useful practical research projects benefiting farmers directly. For myself and Keith Garzoli's team it enabled one of my early publications, the building of Australia's first plastic greenhouse. I have often wondered how much influence did this simple little publication actually have.

John Blackwell

Research Engineer/Scientist, CSIRO Griffith 1968–2005
Professor Charles Sturt University 2007–2019

”

harvest for some fruits such as apples and quinces and should be applied at least 2-3 times before harvest, the last spray being at least two weeks prior to harvest.

About the Fruit Fly

* Fruit fly lays its eggs in all fruit except pineapples including fruits of flowering peaches, japonica, crabapple, jujube and other fruit-bearing ornamental trees and shrubs.

* It does not lay eggs in blossoms or young fruit.

* Ripening fruits are particularly susceptible to its attack.

* It is most active after the end of December.

REMEMBER

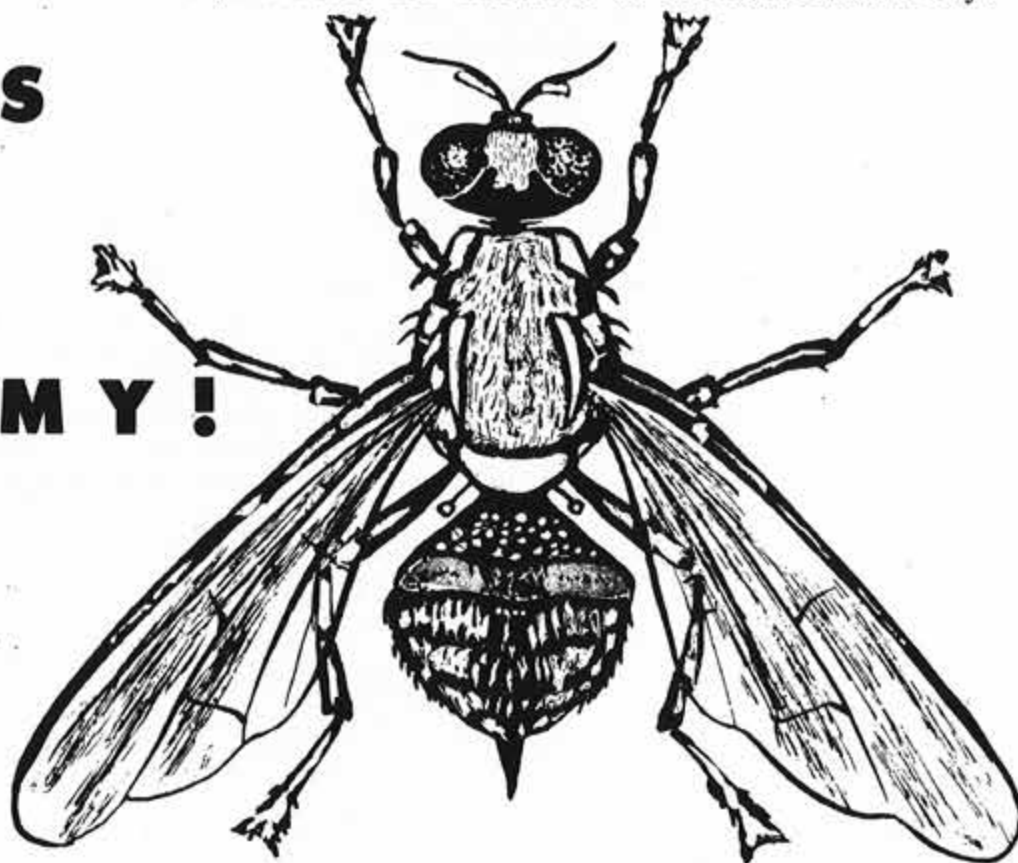
Neglected fruit trees and tomato plants are breeding grounds for fruit flies.

Unless the control measures outlined can be carried out, it is recommended that the plants or trees be removed.

Local council tree preservation orders do not apply to the pruning and/or removal of fruit trees.

Penalties are provided for failure to control fruit fly.

**THIS
IS
THE
ENEMY!**



The *Farmers' Newsletter* regularly provided information about the pests and diseases that could jeopardise local industries and exports of fruit and grain, not to mention the health of crops and livestock. Fruit fly was always at the top of the list.

THE MURRUMBIDGEE IRRIGATION AREA AND QUEENSLAND FRUIT FLY

Paddy Keenan

Retired Supervising Agricultural Inspector (Murray and Riverina Region)

Queensland fruit fly moved from Queensland down the east coast of NSW during the late 1920s and 30s making its way inland to the Murrumbidgee Irrigation Area by the 1940s.

PRIOR to the arrival of Queensland fruit fly, Mediterranean fruit fly was well established in the area. Growers in those days used Deep burial as a control measure. However, with the arrival of Queensland fruit fly and its establishment it soon became the dominant species. By the 1950s Mediterranean fruit fly had disappeared from the MIA.

Control and monitoring

With Queensland fruit fly becoming a major problem for MIA growers, legislation was introduced to place the MIA in a Quarantine Area, which resulted in all fruit fly host fruits banned from entry or subject to treatment and certification.

Quarantine signs were placed on all major roads entering the MIA. Fruit Inspectors were appointed by NSW Agriculture to police, monitor and carry out control measures. The following duties were legally sanctioned by the *Plant Diseases Act 1924* (as amended).

Roadblocks

Four permanent inspectors were appointed during the 1970s to carry out roadblocks on a daily basis, with a significant focus and presence on the Sturt Highway near Narrandera.

Bait spraying

During the summer season the foliage of urban streets trees were sprayed with bait to attract and kill flies both males and female flies. Bait spraying was repeated every 7–10 days during summer and fortnightly in spring and autumn, depending on weather conditions.

DAK pot placement

During the 1970s, 80s and 90s, canite blocks infused with lure and insecticide (DAK pots) were attached to street trees every year during August and September to kill male flies. DAK pots were an efficient measure as they only needed to be placed yearly but sometimes were effective for 3–5 years if well-protected from the weather.

Garden inspections

Town and home gardens were inspected for infected fruit and abandoned fruit trees.

Fruit shop inspections

Shops were inspected to ensure all Queensland fruit fly host fruit had the correct treatment and certification.

All these duties were legally covered by the *Plant Diseases Act 1924* (as amended). Once all the measures listed were implemented, a trapping grid was put in place. A well-designed trapping grid was critical to managing the control of Queensland fruit fly, as was tree selection. Placement of the trap within the tree was also vital. The trapping grip was also essential to meet international and interstate marketing standards for monitoring and declaring fruit fly status. Lynfield fruit fly traps were placed every 400 m² in orchards and every 200 m² in town home gardens. In the event of two or more Queensland fruit fly being trapped in one trap within 14 days, an outbreak was declared covering an 80 km radius. This resulted in valuable export markets being closed or expensive in-transit cold treatment introduced. It also restricted interstate marketing.

Left: *Farmers' Newsletter*, Horticulture No. 151, June 1981

Outbreaks either on farms or town home garden situations required increased baiting and were policed by inspectors for compliance. In the event of non-compliance, inspectors issued S14 Notices. If there was further non-compliance, the owner of occupier was prosecuted.

The MIA quarantine area

It was always going to be difficult to maintain Area Freedom from Queensland fruit flies in the MIA for a number of reasons. Several towns within the buffer zone were (and still are) heavily infested with Queensland fruit flies most years. The city of Wagga Wagga with its size and levels of infestation was a major problem.

There are many roads into the MIA making it very difficult to police for fruit fly inspections. Illegal importation of fruit was always a problem. One example of this was a café owner in Griffith transporting bananas by rail from Sydney to Hillston. Rail transport through the MIA was not subject to quarantine laws. This café owner would regularly travel to Hillston in the middle of the night to pick up his bananas. Griffith inspectors received a tip-off and one particular night waited for our café owner to return from Hillston. At about 4 am our suspect appeared on the main Hillston–Griffith Road driving a heavily laden Holden station wagon loaded with bananas. The chase was on! We in our little Datsun 1600 and he in his powerful Holden. We reached speed of 90 miles per hour and he left us for dead, so we called the chase off. The next day he was interviewed and denied everything.

Another example of dealing with illegal fruit importation was a fruit shop owner locking his cool room and refusing inspectors right of entry. The inspectors got hold of bolt cutters, cut the lock and found over 20 cartons of tomatoes illegally imported into the area. The shop owner was duly prosecuted and fined, as well as losing all his tomatoes.

The MIA Quarantine Area was in place from around 1960 for approximately 50 years. As I have already outlined, it faced many problems. However, the benefits to growers and home gardeners were very good. During most of this time, growers and home gardeners rarely had to carry out any control measures.

As time moved on the cost of maintaining the monitoring and control program became very expensive and residents were complaining about the bait spraying, particularly the drift of the bait into their backyards. As things stand now there is now no legal requirement to control Queensland fruit fly in NSW.

In contrast, the quarantine area for Riverland of South Australia remains strongly supported financially by government, reflecting its very high importance to the SA economy. The greatest asset of the Riverland is its remoteness with only three major highways that have to be policed for potential importation of Queensland fruit fly. The Yamba roadblock on the Sturt Highway, near Renmark, is probably the most known and effective in Australia.

Fruit fly management today

Queensland fruit fly has now been declared endemic to the MIA so gone are the days of the intensive trapping grid and the aim to have the MIA declared Queensland fruit fly free. With no fruit fly Inspection Service, the citrus industry has put a modified trapping system in place, using new automated trap called RapidFLY.

RapidFLY has been widely tested and found to be just as good as the Lynfield trap used by Inspection Services for many years. It uses the same attractant as the Lynfield trap – cuelure – which only attracts the male Queensland fruit fly.

The big advantage with RapidFLY is its automation. It does not require regular physical inspection and only requires servicing every five months. However, they are expensive compared to the Lynfield trap.

Currently there are 12 RapidFLY traps between Griffith and Leeton. In the event of increased levels of activity of Queensland fruit flies in the traps, growers and home gardeners are advised to carry out control measures, via TV advertisements paid for by Griffith and Districts Citrus Growers Association.

Any other advice for home gardeners and growers can be obtained through local agribusinesses and nurseries.

Aligning growers and inspectors

As part of the IREC, a Fruit Fly Committee was formed in the 1970s, with Nell Snaidero as secretary, organising meetings between growers and senior inspection staff.

I must pay tribute to Nell for years organising fruit fly meetings particularly when the heat was on during Queensland fruit fly outbreaks. Also, Roy Sainty did an outstanding job over many years as chairman of the Fruit Fly Committee.

Congratulations on 80 years of commitment to the agriculture industries of the MIA through the *Farmers' Newsletter*. 🌞

Paddy Keenan was the Supervising Agricultural Inspector for the NSW Department of Agriculture from 1983 to 1995. With changes to state and federal responsibilities, Paddy became the Regional Supervising Inspector for the Australian Quarantine and Inspection Service, for southern NSW – a region covering Albury to Broken Hill.

QUARANTINE REQUIREMENTS FOR THE MURRAY & RIVERINA REGION

P. Keenan,
Supervising Agricultural Inspector,
NSW Department of Agriculture,
Griffith.

MOST FARMERS ARE AWARE THEY LIVE IN A QUARANTINE AREA, BUT ARE UNSURE OF THEIR RESPONSIBILITIES. IN THIS ARTICLE, PADDY KEENAN, RECTIFIES THIS SITUATION.

When we talk about quarantine there are two types:

an area may be quarantined to prevent the spread of a serious pest or disease from certain land or premises to unaffected areas

quarantine may also be introduced to prevent the movement of certain plants, fruit or grain into areas which are free from dangerous pests and disease.

M.I.A. FRUIT AND VEGETABLE QUARANTINE

The major reason for fruit and vegetable quarantine in the Murrumbidgee Irrigation Area is to prevent the introduction of Queensland fruit fly.

The shires of Griffith, Leeton, Murrumbidgee and Narrandera make up the quarantine area.

The following fruit and vegetables are not allowed to be brought into the area:

Fruit. Apples, apricots, avocados, bananas, banana passionfruit, blackberries, boysenberries, cherries, grapefruit, kumquats, lemons, limes, mandarins, oranges, tangelos, tangors, sevilles, shaddocks, custard apples, feijoas, figs, gooseberries, gooseberries (Kiwi fruit), granadillas, grapes, guavas, loganberries, loquats, mangoes, medlars, mulberries, ne passionfruit, pawpaw, peaches, pears, persimmons, plums, quinces, raspberries, tomatoes, tree tomatoes (tamarillo (Green), youngberries.

Vegetables. Capsiciums, chillies, eggplants.





PHYLLOXERA QUARANTINE

Phylloxera is a tiny insect of the aphid family. It is the most devastating insect of grapevines. As an indication of its severity, between 1860 and 1885 it destroyed 2½ million acres of vines in France.

The New South Wales Proclamation under the Plant Diseases Act concerning the movement of grapevines in New South Wales has two features:

- It prohibits the importation of grapevines into New South Wales from Queensland and Victoria and from the known phylloxerated areas of the State (the Sydney, Camden and Albury and Corowa areas) to any other area of the State.
- A provision against importing into the phylloxera free quarantine areas i.e. the M.I.A., Murray Irrigation Districts, Hunter Valley, and the Mudgee district.

Movement of grapevines between the phylloxera free areas of M.I.A., Murray, Hunter Valley and Mudgee is allowed provided approval is obtained from the Chief, Division of Plant Industries.

Approval from the Chief, Division of Plant Industries is required for vines coming from Western Australia, South Australia, Northern Territory and Tasmania into the M.I.A. and Murray areas.

RICE QUARANTINE

The rice growing areas of New South Wales are free of most of the world's serious pests and diseases of rice.

That is why the entry of any rice plants, rice seed, rice hulls, straw, milled rice, polished rice, rice pollard or rice bran and any package which has previously contained rice



Warehouse beetle ranges in size for 1.5 mm to 4 mm. Larvae size is 1 to 10 mm with 5mm being average.

Farmers' Newsletter, Large Area No. 124, Autumn-Winter 1984

is prohibited into the shires of Berrigan, Conargo, Murray, Wakool, Windouran, Murrumbidgee, Griffith, Leeton, Narrandera, Urana, Jerilderie, Carrathool South, and east of the Lachlan River and the municipality of Deniliquin.

WAREHOUSE BEETLE

Warehouse beetle is an extremely serious insect pest of stored grain and processed food products.

It has been found at Griffith, Leeton, Yenda, Coleambally, Deniliquin and Wagga.

An order under Section 5A of the Plant Diseases Act requires all owners or occupiers of land or premises in New South Wales harbouring the pest to carry out certain measures.

SUNRAYSIA QUARANTINE REQUIREMENTS

Sunraysia includes the towns of Wentworth, Dareton, Buronga, and Gol Gol.

The requirements are almost the same as the M.I.A.

The introduction of certain fruits, vegetables and packages is prohibited, unless accompanied by a certificate stating that they have been sterilized for fruit fly.

Euston and Barham

These areas are quarantined and the importation or introduction of fruit, vegetables and used packages without a certificate is prohibited.

SUMMARY AND CONCLUSIONS FROM THE BATEMAN REPORT

In this study the results of an economic evaluation of the impact of fruit fly on Australian horticulture and the cost effectiveness of the current publicly funded anti-fruit fly procedures were presented. An examination of the viability of co-ordinating anti-fruit fly activities in the states of New South Wales, Victoria and South Australia was also undertaken. The potential use of the sterile insect technique was evaluated to see whether or not it might provide a more cost effective method of eradication and suppression of Queensland fruit fly in south eastern Australia.

The economic cost of fruit fly incurred by all levels of government and horticultural industries was calculated to be about \$26 million in 1988-89. By far the major cost of fruit fly can be seen in endemic areas where growers have to undertake expensive pre-harvest control measures. The total cost of these measures was estimated to be approximately \$15 million a year. Post-harvest treatment costs and inspection charges amounted to over \$3 million.

The public sector involvement in anti-fruit fly procedures is also significant and accounted for around \$8 million in 1988/89. The various state and territory governments are involved in a variety of fruit fly related activities including monitoring and detection; suppression treatments; eradication campaigns; roadblocks; railway, seaport and airport inspections; and fruit inspection and certification. These activities cost over \$5 million in 1988/89. The Commonwealth Government through the AQIS undertakes export inspection services and monitoring for exotic fruit fly species that cost about \$1.6 million. Combined Commonwealth and State funding for research into fruit fly post-harvest disinfestation treatments accounted for \$1.4 million.

As part of the Terms of Reference for this study, the impact of abandoning publicly funded anti-fruit fly programs in southern Australia was examined. It was shown that the current procedures used to maintain fruit fly area freedom for the major irrigated horticultural regions in New South

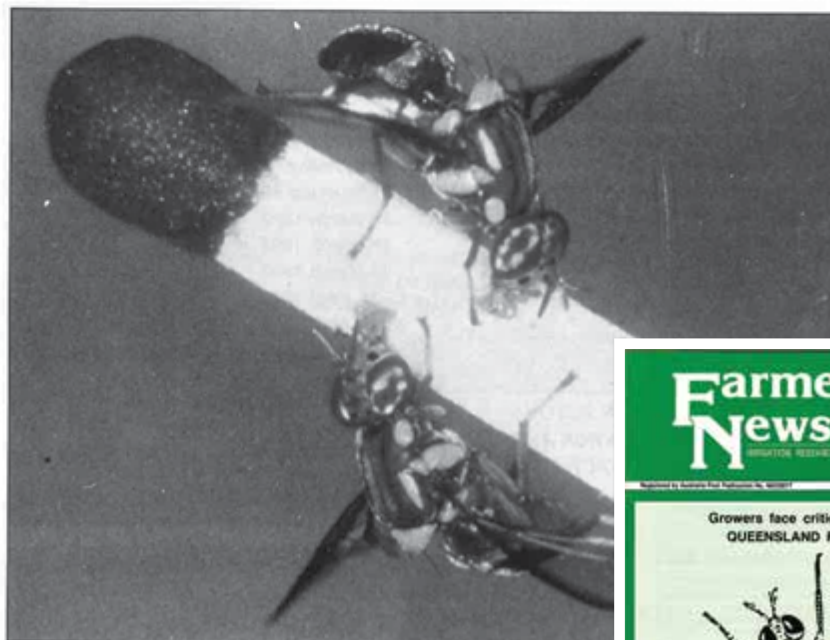
Wales, Victoria and South Australia are cost effective compared with individual growers undertaking farm level fruit fly control. Given the diversity of fruit fly host fruits the analysis was simplified so that the costs and benefits of the publicly funded anti-fruit fly activities were estimated for the major industry in these regions, that is, the citrus industry.

The cost of providing fruit fly control at a farm level was estimated to be between \$13.1 million and \$17.5 million (depending on the severity of infestation) for citrus growers alone. The expenditure of approximately \$3 million by the three state governments to maintain area freedom status provides equivalent protection. Thus even if growers were required to pay for the government funded anti-fruit fly activities, net savings of between \$10.1 million and \$14.5 million would accrue annually for citrus growers.

The Terms of Reference stated that the desirability and feasibility of a national body to co-ordinate anti-fruit fly activities should be evaluated. Given the diversity and localised nature of problems related to fruit fly in Australia a truly national approach was not seen as viable. However, a co-ordinated approach to anti-fruit fly activities in New South Wales, Victoria and South Australia could provide significant cost savings to these three states if eradication and suppression activities were to use the SIT. The technique is far less labour and pesticide reliant than the current eradication and suppression procedures and may help to overcome any public concern about the use of pesticides in urban areas. Operational savings of \$380,000 a year appear to be possible. The SIT would, however, require a substantial initial capital outlay in the form of a 'sterile fly factory'. Calculations of the net present value of the proposed scheme show that it has a positive net present value by the third year. Thus, a movement away from traditional eradication and suppression methods to a co-ordinated tri-state, SIT approach could provide savings in the long term.

Size of Queensland Fruit Fly shown in relation to matchstick.

It is everyone's responsibility to help prevent fruit flies from ruining our valuable horticultural industries.



Farmers' Newsletter, No. 170, Horticulture





An aerial view of the IREC Field Station at Whitton, showing rice (left) and cotton (right) in January 2021. The photo gives a good perspective of the new irrigation layouts and recycle system.



The IREC Field Station provides a site where local and visiting irrigators can see new technology and crop management options working in a commercial and real-life scale situation.

In 1953, after a hiatus due to World War II, IREC reaffirmed its purpose of 'initiating research and passing along information which can ensure grower opinion is informed in its own interests'. The establishment of the IREC Field Station, 70 year later, continues to serve this purpose.

A HISTORY OF PROVIDING IRRIGATORS WITH RELEVANT R&D

Iva Quarisa

Executive Officer IREC

In 1953, IREC was instrumental in 'initiating moves' that led to deep-well pumping of the Yanco Irrigation Area, and planning was underway to complete a survey of every large-area farm to provide 'vitaly needed information' about growers' priorities for research and extension.

IN 2015, the re-development of the IREC Field Station as a site for showcasing the latest innovation in irrigation farming was a key turning point in the resurgence and rebuilding of IREC after a hiatus during the Millennium Drought.

Located on Stott Road at Whitton, the site (and water) had previously been used as an intensive research site by CSIRO from 1982 to the late 1990s. The site was then leased to a local irrigator. In 2015, the new IREC Chairman Rob Houghton, identified the field station as an under-utilised resource for IREC.

There were two main drivers for IREC to take on the management of the site: to grow crops as a reliable source of income for IREC, and to demonstrate options for irrigated cropping and management, and showcase innovation and new technology in automation of surface irrigation. But first, the existing layouts would need updating.

Redesigning the field station

To make best use of the site, the layout was upgraded from a siphon system, commonly used in the area, to a layout of beds in a bankless channel layout, with drive-over banks.

Financial assistance from the Cotton Research Development Corporation, Cotton Seed Distributors and Riverina Local Land Services, with discounts on hardware from Rubicon and Padman Stops, made it possible to re-laser what is now known as A and B blocks and install Rubicon's 'Farm Connect' system automation technology.

The new layout enabled IREC to grow commercial cotton and rice crops, undertake locally relevant research and trials, while displaying cutting edge and state of the art surface irrigation layout technology. It also provides the ideal site for the annual IREC Field Day. At the inaugural field day, we hosted 120 irrigators, advisors and industry representatives.

Murrumbidgee Irrigation selected the channel lateral at Whitton as a pilot for automation of their outlets onto farm, which took water ordering to whole new level. Not only could we order water via an app on our mobile, but the MI outlet could also open and close automatically coordination with MI channel structures which meant we also had a shorter water order time.

In 2018, IREC obtained a grant from the Grains Research and Development Corporation which made it possible for IREC to convert and automate (using Padman automation technology) C and D blocks to a pipe-through-the-bank layout. This coincided with the removal of sub-surface drip irrigation system on D block which had been installed 15 years earlier.

This layout retains the characteristics of a siphon layout but removes the labour-intensive nature (and work health and safety issues) of siphons and the need of a rotor buck area.

The final piece of the puzzle was upgrading and automating the drainage recycle pump site. This was completed in 2018 using 'Bidgee Automation technology. The upgrade included moving the old pump site, cleaning and deepening the recycle channel, and installing pipework to pump recycle water into the storage or into the supply channel. The new system has not only increased the flexibility of the recycle system but has also been a great water-saving measure.

Automation technology was fitted to the pump and structures, which allows the pump to start and stop automatically, based on the water level in the recycle channel. This technology has proven invaluable on a number of

occasions, when storm events have resulted in large runoff volumes of water from fields. Rather than having to drive and walk on very muddy roadways, we were able to start the recycle pump remotely without risking getting bogged or ruining farm roadways (as well as the inconvenience of being out in the rain!).

Implementing grower ideas

The IREC Field Station has allowed us to grow a range of crops at the field station, including barley, cotton, mung beans, rice, sunflowers and wheat, as well as undertake highly relevant trials and research, such as use of animal manures and variety trials.

At breakfast events hosted after the field station was upgraded, attendees identified and prioritised research gaps. This led to projects such as establishing the Riverina Valleys Stop Off-target Spraying program, irrigation layouts and automation demonstration at the field station and Pulse Check project.

Growers are regularly asked for advice on research or knowledge gaps at all IREC events, including the annual research update and project workshops.

Providing an irrigation showcase

Installing and using automation technology from three different suppliers (Rubicon, Bidgee Automation and Padman) in-field and at the drainage recycling pump site gives visitors to the site the opportunity to see firsthand the different technologies.

The site provides a great backdrop to educate visitors on the benefits of irrigated agriculture and advocate for our industry. We have welcomed irrigators, researchers and industry representatives from across the region and groups such as university and high school students, various research and development corporations and boards, and the Murray–Darling Basin Authority. We have also hosted guests from across the globe including Japan, Myanmar, Latvia, Kazakhstan, India, Bangladesh and Uzbekistan.

The Field Station is an incredible asset to be used for the betterment of the irrigation industry. 🌞

Iva Quarisa has been Executive Officer of IREC since 2013. Previously, as an Irrigation Officer with NSW DPI from 1994 to 2013, Iva was on the committee of and a judge for the IREC Irrigated Farm Competition. She was also Vice Chair of the IREC Executive Committee from 2008 to 2013. Iva also has practical experience of broadacre farming in the MIA.

Congratulations on the 80th Anniversary edition of IREC Farmers' Newsletters!



CSD proudly supports cotton innovation in southern NSW



csd.net.au

The Editor Talks To You

I.R.E.C. SPELLS PROGRESS

To say that I.R.E.C. spells progress is something of an under-statement....it has meant, in fact, an aid to survival of rice farms and horticultural properties on the Murrumbidgee Irrigation Areas.

I.R.E.C.—Irrigation Research and Extension Committee—came into being as a result of a double crisis—a flood and a world war. The birth wasn't easy—it took a lot of people helping before the infant saw the light of day.

Growing pains were acute—I.R.E.C. brought farmers together with all State and Federal agencies connected with agriculture. That meant making a team out of components which had often rubbed against each other in the wrong way.

To-day, the growing period is over. I.R.E.C. stands with prestige and a solid record of achievement behind it. But, although it has spelt progress and aid to farmers, some still fail to realise what I.R.E.C. is and what it is trying to do.

It is, in fact, a unique instrument of administration—unique in Australia and unique on earth. A coordinating body, it has the task of advising the powerful agencies of governments yet it has a majority of farmers.... the farmers whom the agencies have been set up to serve. Could anything be more democratic?

Of course, such progress comes not without effort. The farmers' efforts are translated into a hard cash contribution to I.R.E.C. amounting to £8000 a year. This is the money which helps oil the machine of service to the farmer.

The setup is good and it's worth while asking what the performance is. Let's look at it closely. From the rice-farmer's point of view it has meant this. I.R.E.C. has been instrumental in initiating moves which have culminated only recently in launching a scheme for the deep-well pumping of Yanco Irrigation Area.

Research has shown that there is complete saturation of underground sandbeds which, if left to spill over, would ultimately have led presumably to a progressive ban on rice-growing in the Area and perhaps the water-logging of the entire district.

Work has now begun on bores which will relieve the pressure of this underground water and remove the danger to existing farms.

That is a major example of the work that has been done—the safeguarding of an entire Irrigation Area.

Other tasks have included the launching of a pure rice seed scheme which will ultimately raise yields, investigations which may well lead to the establishment of a beef cattle industry on the M.I.A., moves which are designed to bring a veterinary officer to the region, and action which led to the appointment of a sheep and wool officer.

The story is only partly told. The work is only beginning. A complete survey of every large-area farm is now being planned by I.R.E.C. which will provide vitally needed information to enable more to be done in the way of research and extension for the growers on the broad acres.

It's desirable and useful to have associations for the present group-viewpoints to government executives but no amount of talk substitute for knowledge patiently gained by research and investigation.

In other words, unless you have informed opinion—primed by— the opinion is of little value and representations based on ill-founded opinion can have no sound outcome.

I.R.E.C. is the one means whereby arrangements can be made for initiating research and passing along information which can ensure that opinion is informed in its own interests.

20



Farmers' Newsletter

IRRIGATION RESEARCH AND EXTENSION COMMITTEE

Registered by Australia Post Publication No. NAC08177

704

NO. 131 LARGE AREA

APRIL 1998



IMPROVED FARM PRODUCTIVITY

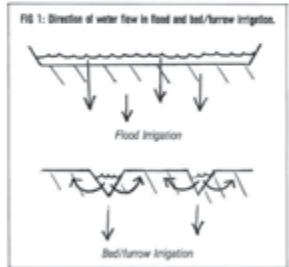


Beds Beneficial for Difficult Soils

Penny Dunstan, former District Agronomist, NSW Department of Agriculture, Jerilderie.

Most farms have a difficult paddock where conventional irrigation technology does not seem to fit. Bed-farming is one method of lifting the production of difficult soils.

- The advantages of using beds are as follows:
1. They provide good drainage. This is especially important where the layout is flat and/or there are long run-lengths, or watering is slow.
 2. They increase the internal drainage of the soil which reduces water-logging problems and allows plenty of air around plant roots which encourages growth during irrigation.
 3. With beds, water movement is upwards and so any applied gypsum, which is dissolved in water, is recycled and lasts longer in the topsoil, where it is most desirable.
 4. Landforming for steeper slopes can be reduced, especially where unsuitable sodic subsoils would be exposed.



SUCCESS AT JERILDERIE

John Watt of "Woronga", at Jerilderie, discovered the advantages of bed-farming for winter pasture production. Mr. Watt landformed a 162ha paddock in 1962 in preparation for growing wheat. The soil in the paddock was grey sodic-clay, found along prior creek lines, typically responsive to gypsum and fat. Five t/ha of gypsum was applied to the paddock in 1964 and fertilizer, sufficient for a four t/ha crop was applied annually. With an average wheat yield of only 1.4 t/ha (green bags/ton) over 1962-84, Mr. Watt decided to try bed-farming as an alternative method of production. Unfortunately, an unsuitable choice of wheat variety and low seeding rate resulted in a poor crop the following year.

Also initial soil salting when watering-up can be a problem especially if soil structure has been damaged through excessive ploughing.

PASTURE ON BEDS

As the emphasis at "Woronga" is on wool production, it was decided to sow the problem paddock to winter pasture using the existing beds from the final year of cropping. Pasture species chosen were Trifolium sub-clover, native medic, Clare sub-clover, Siriza phalaris, ryegrass and Palestine strawberry clover. The pasture seed was inoculated pelleted and broadcast into the undisturbed stable and beds with 200 kg/ha of single superphosphate. The paddock was watered-up the following day, April 2, 1986.

Mr. Watt has run 3250 sheep on the 162 ha which is an estimated carrying capacity of 170SE/ha/year. He has found that winter pasture works well utilising winter rainfall and filling a feed gap in early autumn when remaining feed has little food value. He can also water-up very early in February, because with the beds, there is no scalding problem.

He has found no problems with running sheep on pasture grown on beds apart from the difficulties of chasing sheep on a motor bike. Other graziers have found that sheep in fall wool or heavily pregnant ewes may get cast in the furrows.

It is expected that farrow maintenance will be required on 10 percent of furrows every two years.

Other growers have had similar experiences with growing sub-clover, white clover and lucerne on beds. Martin Maynard, at Hay, is growing lucerne successfully on 18m beds, with 600m runs on a 1/2000 slope and obtaining up to 1.5 t/acre per cut for intensive hay production.

If you have soil, waterlogging and drainage problems, beds is one method of increasing production.



Bed-farming can lift pasture production on difficult soils.

1998 Farmers' Newsletter, No. 131 Large Area, April 1998

9

Farmers' Newsletter

IRRIGATION RESEARCH AND EXTENSION COMMITTEE

LARGE AREA

NO. 151
JUNE
1998

IRRIGATION RESEARCH & EXTENSION COMMITTEE

The Farmers' Newsletter is supported by...

1800 9467 - 8382

Quality assurance down on the farm

Quality assurance (QA) is moving off the factory floor and down the production chain. In this article, Kim Russell, explores the importance of QA on his side of the farm gate.

Rural industries are facing stiffer competition, domestically and internationally.

Demands for higher quality are being felt and there is closer scrutiny of our production practices from our communities.

Another element being demanded is continuity of supply and as irrigators this is an element that can place us in an advantageous position.

However, as irrigators we are now being focused upon very closely, and if we are to survive this scrutiny we need to employ practices that optimise production.

These practices need to satisfy our needs for viability, our community's needs for sustainability and our customers' needs in relation to price and quality.

We are endeavouring to develop a system at "Woodlands" which see the production of complimentary crops grown in a manner which will virtually market themselves.

A significant element of the "Woodlands" strategic plan is to gain ISO9002 accreditation.

The attainment of this standard takes us through a detailed process where a system of planned arrangements provide a means by which our objectives and policies are met.

We believe this management system is "nothing more than accumulated common sense" (KPMG), and will allow us to control all of the processes necessary to meet our customers' requirements.

- This system requires us to:
- undertake a detailed analysis of our business,
 - understand the relevant standards,
 - draw together a documented system,
 - have control over our records,
 - ensure our management reporting systems work and
 - regularly carry out internal audits.

quality

Kim Russell, "Woodlands", Darlington Point.

Food safety issues will become more and more important in the next few years. Traceability back to the field will be a marketing advantage in the short term, and a pre-requisite very soon after.

Besides the ISO Quality Assurance system being one recognised and accepted world wide, it provides the framework for an expanding enterprise such as ours to have in place a well documented management system, that has the customers needs foremost in mind.

This customer-focus is something that we are keen to maintain because without it the messages sent by us to the customer are different to the ones they receive and vice-versa.

It must be remembered that a QA system does not look after your viability. ISO 9002 is designed to look after the customer, if you go broke in noble attempts to satisfy your customers that is unfortunately your problem.

In relation to recording and documentation we are using Crop check cards as the basis of our "Process control" monitoring and recording.

A point I would like to make here is that if you are not able or willing to fill out a crop check card fully, accurately and consistently there is no point thinking any further about entering into a QA arrangement with your customers. Some of the recording is tedious but these are very few more user-friendly systems available.

The rest of QA is following a process of "Saying what you do and then doing what you say".

To realise the potential of such a system we need to work back from the consumer or retailer through a processor and provide for that consumer what they want.

We then need to guarantee the quantity and quality required, particularly the food safety aspects.

39

Behind the production of the *Farmers' Newsletter* has been a band of editors with strong links and experience in irrigated agriculture. Together with IREC committees they have delivered more than 400 editions to readers.

MORE EDITORS “TALK TO YOU”

John Muir

Editor 1988–1992

Former District Agronomist, Hay

Hemp developer at large

I was editor for the IREC Large Area *Farmers' Newsletter* from 1988 to 1992 and maybe one can tell by the large amount of photos I used – I still believe a picture tells a thousand words!

THE IREC *Farmers' Newsletter* was a vehicle to promote technology being developed. We did articles several times on permanent beds for irrigated cropping. In belief of the new technology we also published an AgFact called 'Cropping on Permanent Irrigated Raised Beds in Southern NSW'. It is normal standard best management practice now.

I have just had the good fortune to read the list of articles and topics in the Large Area *Farmers' Newsletters* since 1980. It is a great written tribute and record of the dedication, influence, impact and importance that the IREC has had on the future sustainable development and management of Riverina irrigation farming systems and livelihoods.

Some other highlight articles included our alternative winter crop trials with Keith Harris – including safflower, failure (broad) beans, chickpeas, rapeseed and lucerne hay for export to Japan – all on beds. Importantly, we covered Martin Maynard's introduction of controlled traffic farming and permanent raised beds – all before GPS. Gundaline, Daryl Gibbs, Rudds Point, Bruce Beattie at Nullarbor and Ravensworth were all early starters! Another key topic was addressing how to manage the generally riverine heavy-clay, waterlogging-prone, irrigated soils! Thanks to all the crew at NSW Ag, CSIRO and IREC. 🌅

Michael Murray

Editor 1994–2000

Former irrigator, Darlington Point

General Manager, Cotton Australia

The *Farmers' Newsletter* has been a huge part of irrigated agriculture, in particular across southern NSW, but its influence has spread way outside that footprint.

THE newsletter has always reflected the broad irrigation research that has been conducted, and was presented in a farmer-friendly manner, aiding the extension and adoption of great research. Over the years, the focus of the newsletter has changed, reflecting both changes in what irrigation farmers are producing, and how they seek to produce it.

A perennial topic for the *Farmers' Newsletter* through the 70s, 80s and 90s was ongoing development of water run urea in maize growing by Dr Warren Muirhead. This remains standard practice with many crops grown on beds.

On the flip side, there was a multi-year project, located on what was then Bartter's Enterprises land at Hanwood, which trialled high density stocking of Merino wethers on irrigated pastures. I strongly suspect there is very little uptake of findings from that project.

However, most of the work that has appeared in the newsletter over 80 years has been taken up in the appropriate time and manner and greatly assisted irrigation farming to continue to flourish.

The newsletter is just one of the public faces of IREC, which only exists because of the great work of its dedicated volunteers and staff, and the efforts of the research community.

I wish the *Farmers' Newsletter* all the best for the next 80 years. 🌅

LEFT: *Farmers' Newsletter*, Large Area No. 131, April 1988; *Farmers' Newsletter*, Large Area No. 151, June 1998

IREC Executive Committee

IREC Chairman	Matt Toscan	0429 695 058	info@cavasofarming.com.au
IREC Deputy Chairman	Dallas Stott	0428 552 763	dallas@stottfarming.com
Executive Officer	Iva Quarisa	0402 069 643	iva@irec.org.au
IREC Engagement Manager	Monica Armanini	0491 380 399	irec@irec.org.au
IREC Project Officer	Sarah McCaskie	0499 511 507	po@irec.org.au
Field Station Manager	Stephen Collis	0458 822 525	stephen.collis00@gmail.com
Agronomy	Hayden Petty	0447 825 052	hayden.petty@summitag.com.au
Charles Sturt University	Shamsul Haque	0421 238 528	khaque@csu.edu.au
Coleambally Irrigation	Bernard Star	02 6950 2839	bstar@colyirr.com.au
Cotton Industry	Kieran O'Keefe	0427 207 406	kieran.okeefe@cottoninfo.net.au
Deakin University	John Hornbuckle	0429 862 920	j.hornbuckle@deakin.edu.au
Education	Carl Chirgwin		cchirgwin81@gmail.com
Griffith & District Citrus Growers	Vito Mancini	0412 690 481	admin@gdcga.com.au
Hort Innovation Australia	Adrian Englefield	0427 143 709	adrian.englefield@horticulture.com.au
Leeton District Citrus Growers	Nominations welcome		
Maize Industry	Matt Toscan	02 6968 4703	info@cavaso.com.au
Murray-Darling Basin Authority	Matt Woodward	02 6279 0788	matt.woodward@mdba.gov.au
Murrumbidgee Irrigation	Sam Yenamandra	02 6962 0200	sam.yenamandra@mirrigation.com.au
NSW Department of Primary Industries	David Troidahl	02 6951 2546	david.troidahl@dpi.nsw.gov.au
Rice Extension	Virginia Porcile	0419 110 938	vporcile@sunrice.com.au
Rice R&D Committee	Mark Groat	0419 174 772	magroat@sunrice.com.au
Ricegrowers' Association of Australia	Graeme Kruger	02 6953 0410	gkruger@rga.org.au
Riverina Local Land Services	Justin Vardanega	02 6960 1316	justin.vardanega@lls.nsw.gov.au
Vegetable Industry	Nominations welcome		
Wine Grapes Industry	Brian Bortolin	0401 567 449	bbortolin@wgmb.net.au

Administration & Advertising

The IREC *Farmers' Newsletter* is produced and published by the Irrigation Research & Extension Committee. To become a member of IREC, please contact the IREC office or visit the [IREC website](#).

Businesses and organisations interested in advertising in the IREC *Farmers' Newsletter* should contact the IREC office.

IREC Office

IREC, Lot 255, Research Station Road, Griffith NSW 2680

T: 02 6963 0936

E: irec@irec.org.au

Editorial

The IREC *Farmers' Newsletter* welcomes suggestions and contributions of articles. If you wish to contribute an article, please contact the Editor.

Lucy Kealey, Editor

IREC, Lot 255, Research Station Road, Griffith NSW 2680

M: 0417 043 982

E: lucykealey@bigpond.com

Design & Production

Leysa Flores Design

E: hello@leysafloresdesign.com.au

W: www.leysafloresdesign.com.au

Front cover photo: IREC hosts an Annual Field Day at its field station at Whitton to present results of grower-directed research and demonstrations. Photo: Iva Quarisa.

Disclaimer

Articles contributed to the IREC Farmers' Newsletter are prepared by experts or professionals in their field or by persons with extensive experience in the subject area. Accordingly, these articles are accepted in good faith as being the most relevant and accurate information available at the time of publication. Information contained within this newsletter has not been independently verified or peer reviewed, and advice is given at the reader's risk. Products or services may be identified by proprietary or trade names to help readers to identify particular types of products but this is not nor intended to be an endorsement or recommendation of any product, manufacturer or service provider.

