

SOILLESS

A U S T R A L I A

Protected Cropping Australia Industry Trade Magazine



Rijk Zwaan celebrates a centenary of seed

GETTING A HANDLE ON
WEATHER & CLIMATE

HOW TO MAKE
YOUR IRRIGATION
SYSTEM WORK

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SINCE 1990

contents

FRONT COVER

Fruit and vegetable breeding company Rijk Zwaan is marking 100 years in business expanding from a small seed store in The Netherlands to an international company. Varieties include 'Sweet Palermo Yellow' capsicum (shown on cover). Read the full story on page 17.



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EVENTS

BerryQuest 2025 heads to Hobart..... 14

CELEBRATING A CENTURY OF SEED

International company Rijk Zwaan looks back 100 years to its beginnings in a small seed shop in Rotterdam..... 17

ENVIRONMENT

Growers need better understanding of weather and climate reporting..... 21

PCA PROFILE

Meet Zak Iqbal..... 24

DISEASES

Tracing the story of tomato brown rugose fruit virus in Australia .. 26

REGULAR FEATURES

Welcome.....	4
Board members.....	4
From the PCA Chair.....	6
Across my desk.....	8
News.....	10
Events.....	14
Calendar.....	15
Nitty Gritty with Tony Bundock.....	30
Biological controls with Stephan Malherbe.....	32
Ion Staunton on the lifecycle of moths and butterflies.....	34
Pests & diseases updates.....	35
Movers & shakers.....	37
Membership subscriptions.....	39
Advertorial from Jiffy.....	40
Last word with Andrew Tout.....	42
Advertisers' index.....	42



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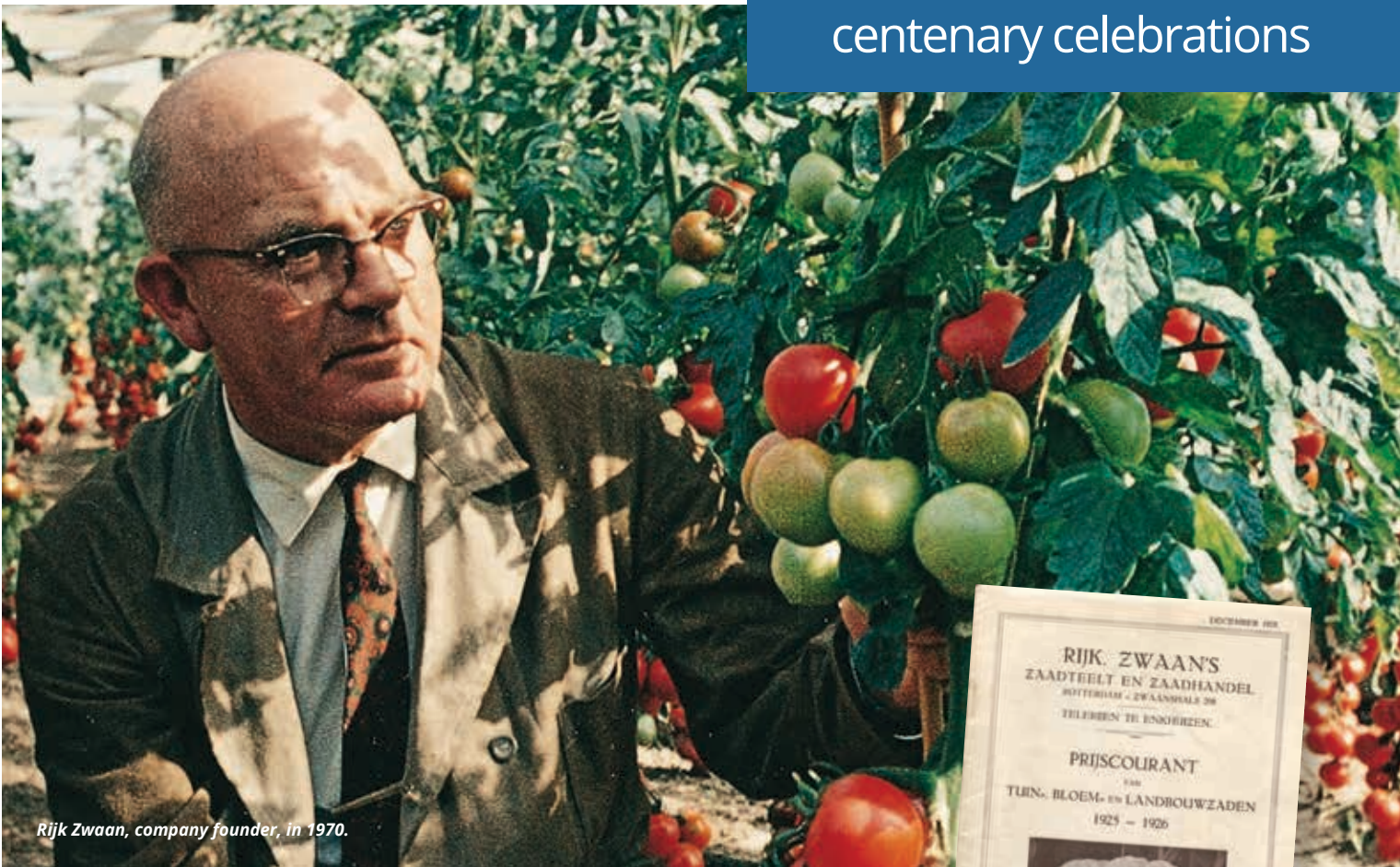
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Rijk Zwaan, company founder, in 1970.

Marking 100 years of growing

Rijk Zwaan is incredibly proud to celebrate a major milestone this year: 100 years of growth. Here the company shares its journey from a small seed shop that opened in 1924 to a worldwide seed breeding business.

Our journey began with Rijk Zwaan's vision to enhance the quality of vegetables while ensuring their accessibility and affordability for all. From a small seed shop in Rotterdam in The Netherlands in 1924, Rijk Zwaan is now represented worldwide, with 4000 employees continuing to uphold our founder's pioneering nature.

Through years of diligent research, hybridisation and selecting varieties with ideal characteristics, we introduce outstanding vegetables that continue to transform the way vegetables are grown and consumed.

Rijk Zwaan opened the doors of 'Rijk Zwaan's Zaadteelt en Zaadhandel', his seed cultivation and seed shop in the roaring '20s. Striving for higher quality seed and vegetables, he

soon began his own vegetable breeding operations.

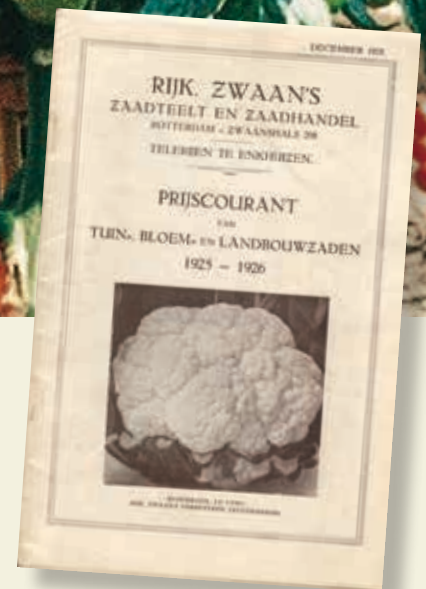
Rijk bred open-field vegetable crops, such as cauliflower, leeks, and carrots, as well as crops for indoor cultivation, even though large greenhouses were not yet common. The company pioneered this market in The Netherlands.

A global company

Rijk Zwaan's small 'Zaadteelt en Zaadhandel' has evolved and grown with the world. The company, now named after its founder, opened its first international office in Welver, Germany, in the mid-1960s, followed by offices in Spain and France and later beyond Europe. The Australian subsidiary was founded in 1987 in Daylesford, Victoria.

The Rijk Zwaan business model includes three phases:

1. Research and development (breeding programs, developing vegetable varieties);
2. Production (farming seed for research and for sale); and
3. Sales (getting the seed to growers).



Rijk Zwaan AT A GLANCE

35 independent subsidiaries in 31 countries.

Distributors in more than 100 countries.

Employing more than 3900 people.

Seeds for more than 25 crops.

1500 commercial varieties.

\$240 million invested in R&D each year.





Understanding changes in weather and climate

While weather occupies our minds on a daily basis, it's climate change that's worrying Tom Remenyi, Director, Acclimatised, as he told a recent industry seminar in Tasmania.

"We often hear people talk about weather and climate as if it's the same thing but if you think about what they actually are, we use them in fundamentally different ways," Tom Remenyi explained.

He also urged attendees to trust climate science and believe that we are in a changing climate.

"We can predict climate change really really well, but we can't forecast the weather ahead with any accuracy," he said.

Weather forecasting relies on information from the daily, monthly and annual scales. At the moment, weather forecasts for up to seven days are fairly good but less accurate the further out we zoom he said.

"Seasonal forecasting is getting better, but it isn't there yet," he added. "It is not much better than climatology."

Climatology is basing forecasts on past records said Tom stressing that having confidence in climate drivers over the long term is needed improve longer term forecasts.

"There's a lot of certainty for temperature, less for rain but a lot of confidence around soil moisture," he said. "We are going to be in a different climate in the future and can make decisions based on being in that different climate. We know it is going to be 2C warmer at a global scale and we know that means it is

going to be approximately 4C on the land so we can see that our water needs will be that much higher, and we can start planning for that now. Calculating that isn't straightforward but we can start making longer term decisions now."

His message is that we need better understanding of the systems that effect our weather and how to incorporate them into our forward planning.

How the weather forecast comes to us

"Weather forecasts take observations from weather stations, satellites and from a bunch of other things and say what does the current system look like right now. It then incorporates all that information into a model, hits go and off we go," he explained. "There are many models – the weather bureau runs 100 different models every day so there are many outcomes. A forecast is only useful if it is better than what we know from climatology based on past records.

"The problem the Bureau has is that there are many answers as to what may happen tomorrow or in seven days' time, but the Bureau must select only one for a forecast. One of the models is probably right, but it may not be the model selected."

This means, growers must find metrics that are useful to them for better accuracy.

"We are not limited by our knowledge but by computational scale," he added explaining that AI and quantum computers will help improve the accuracy of forecasts.

"Models are getting better and better as we keep running them," he stated but it helps to understand how they work.

"A lot of models are run at 5km resolution but a weather event such as rain may happen on a 100m scale it may be inaccurate in one area but accurate nearby. That's why there's always a range of possibilities in the forecast, which is why the weather bureau gives a percentage possibility of rain for example based on the size of the grid cell.

"Storms are hard to forecast as they are small and high intensity and tiny changes in topography for example can affect outcomes."

An example of how new information is helping improve the accuracy of forecasts is a better understanding of CO₂ and its increase in the atmosphere.

"About five or six years ago weather forecasters around the world realised their accuracy was degrading as they weren't incorporating CO₂ in their forecasting. It was a missing component and one that was changing rapidly, incorporating it meant greater accuracy in the three-day and seven-day forecasts."

Tom says many other people will enter the forecasting space and tailor their information to special needs such as the wine industry. There are apps already in the space such as yr.no, which are using the same data that the Bureau is using to produce models that relate to Australia.

"Sometimes these are spot on and sometimes they aren't," he concluded.

Getting better seasonal forecasts

Like the weather forecast, seasonal forecasts use observations but look further into the future. A major factor is where we are sitting

"...WE NEED BETTER UNDERSTANDING OF THE SYSTEMS THAT EFFECT OUR WEATHER AND HOW TO INCORPORATE THEM INTO OUR FORWARD PLANNING."



The distinctive walk of a looper caterpillar.
Photo Adobe Photo Stock.



A look at the 'Flutterins' and their caterpillars

Ion Staunton catches up with butterflies and caterpillars and outlines their lifecycle and control.

In all the years I've been writing for this magazine, I haven't written about the lepidopterans – the moths, butterflies and their hungry larvae...caterpillars. Why?

Protected cropping usually means walls and therefore fewer significant invasions from this group. But it happens of course; walls aren't always in place and the fluttering adults have sensory equipment and the dominating goal to lay eggs on plants that are full of life and tasty juices. For them navigating an open

doorway is a breeze. Getting inside away from birds may also have a bit to do with your occasional need to know some basic stuff on the insect order Lepidoptera. Here's the simple version.

Lifecycle at a glance

Lepidoptera eggs can be laid singly or in batches on the plant. Caterpillars hatch a few days later and immediately start eating and moving around the plant. During the day, the larger ones can be down among the lower foliage (instinctively away from birds?). All have mandibles or chewing mouthparts, low and frontal on the head capsule. They have

six stomata that are simple eyes but seem unable to detect much more than light and dark. On the thorax, just behind the head, are three pairs of legs with joints and tarsi (feet) then there's a gap until the rear-end prolegs, which are not proper legs.

Loopers have two pairs of well-developed prolegs toward the end of the abdomen and another pair on the almost last segment so that as they 'walk' they transfer weight to the front legs, bringing their prolegs up to get a grip close behind the real legs then raise the rest of their body to reach ahead, which is why loopers are sometimes called 'inchworms'.

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