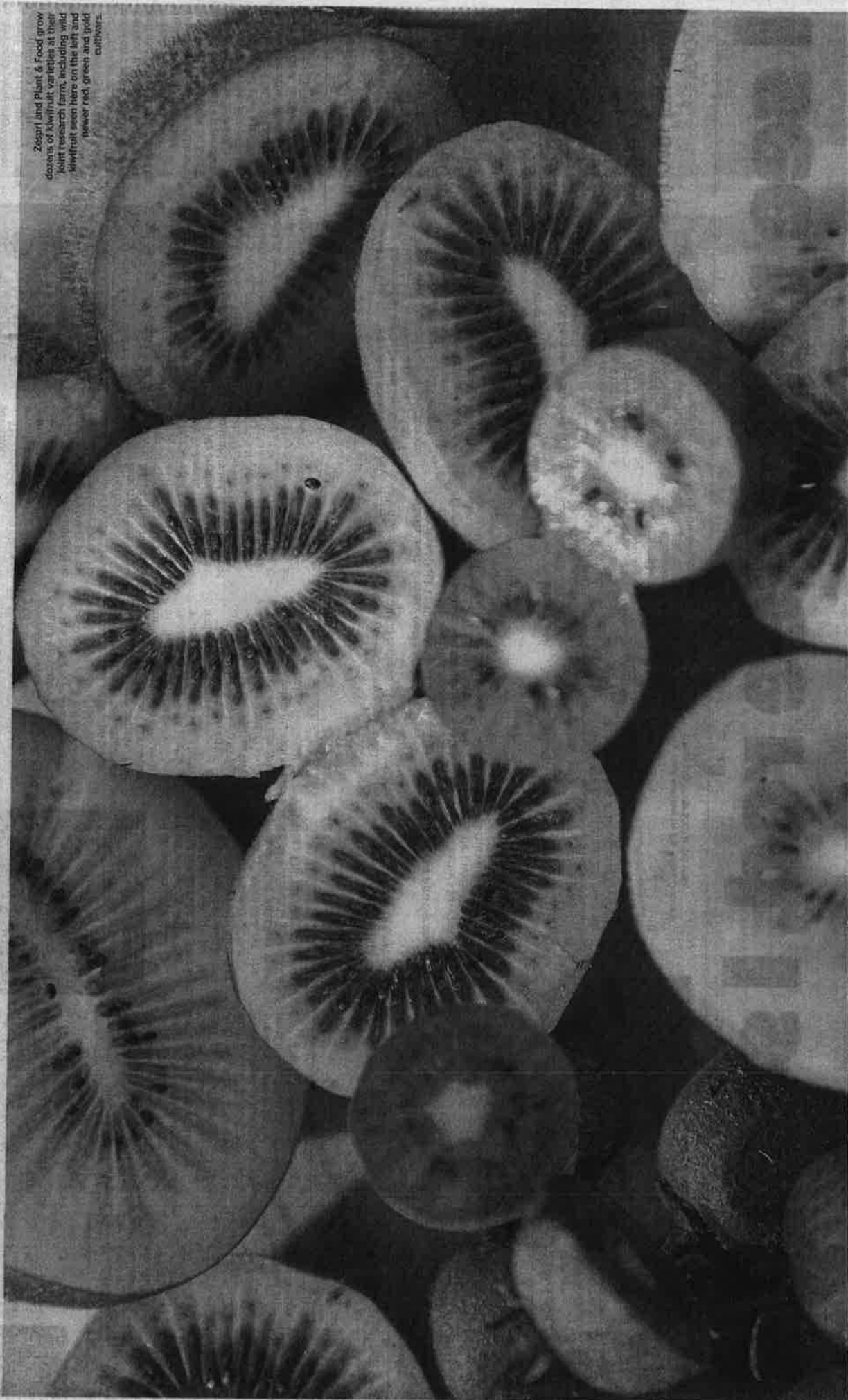


Waikato Weekend

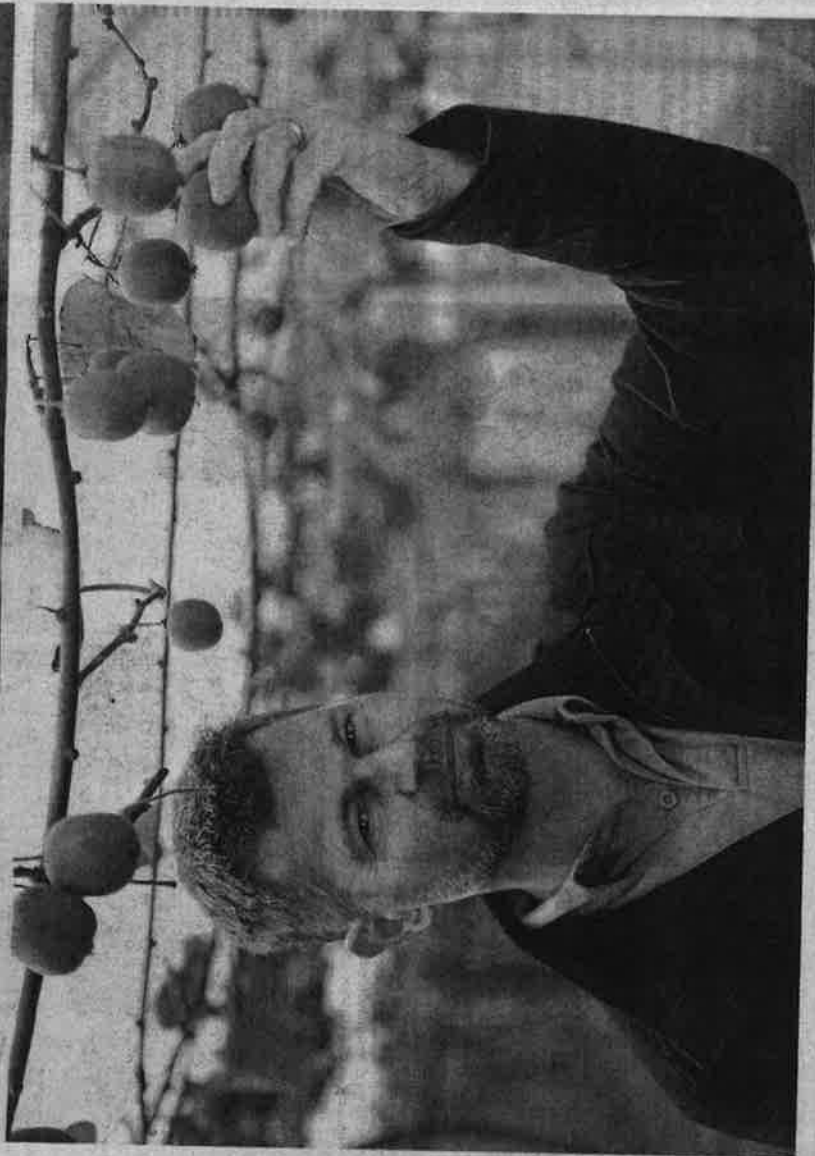
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B1



Zesoni and Plant & Food grow dozens of kiwifruit varieties at their joint research farm, including wild kiwifruit seen here on the left and newer red, green and gold cultivars.

Seed, Seed, Seed, Seed, Seed



Bryan Parkes, operations manager for kiwifruit new cultivar development, says researchers have about 50 red kiwifruit varieties in the advanced development stage. PHOTOS: TOM LEE/FARFAX NZ

The researchers behind the hugely successful Gold3 kiwifruit are developing a new raspberry flavoured red variety, writes Gerald Piddock.

It's red, it's raspberry flavoured and it's a kiwifruit.

And it could be the next big thing to take off in New Zealand, once it's released by Zespri to growers in a couple years.

The still unnamed fruit has a tentative title of Zespri Red and is the latest product to come out of a breeding programme jointly run by Plant & Food and Zespri at a 50-hectare research orchard on the outskirts of Te Puke.

The same programme is responsible for the hugely successful Gold3, also known as SunGold.

A recent study from the

University of Waikato showed that kiwifruit's contribution to New Zealand GDP is set to increase from \$2.6 billion in 2015/16 to \$6.14b in 2030, with an additional 29,000 New Zealand jobs driven by Gold3.

The report said the industry would be less than half of its projected size without this new variety.

It is hoped the red kiwifruit will rival the



Continued on B2



Plant & Food scientist Pauline Audooye studies the photosynthetic efficiency of kiwifruit leaves at the research orchard near Te Puke.

PHOTOS: TOM LEITCH/PAFF/PAFF

success of SunGold in the export market, although it is still at least two years away from being released to growers.

It would then be another two or three years before the first fruit becomes available for export. Zespri operations manager for kiwifruit new cultivar development Bryan Parkes says, "The red fruit would also help keep the kiwifruit industry out of the commodity space, Parkes says. "The only way we win the kiwifruit battle is to make sure we have the most desired product and the way to do that is to have the best cultivars."

The kiwifruit breeding programme is the biggest and longest running of its type in the world. It is one of three sites run by Plant & Food dedicated to developing new kiwifruit cultivars. The other two are in Kerikeri and Motueka.

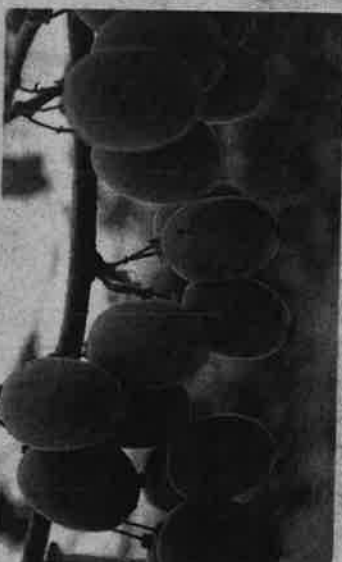
Its goal is to keep developing new cultivars for the industry that allowed it to stay ahead of international competitors.

The red kiwifruit will help Zespri achieve that and has huge export potential, Parkes says. Gold3 in its patented plant variety rights (PVR) lifecycle is estimated to be worth \$40b in sales by the time its PVR expires in 2035.

When the red is eventually released, he estimates it will be slightly less than this value over its PVR lifecycle.

"Even if it's worth only half of what Gold3 is, it's still a big number."

Zespri probably would have been close to commercialising a red cultivar already if Psa had not cornered along.



Zespri Red kiwifruit on the vine.

Following the outbreak, researchers subsequently discovered that red kiwifruit as a species is highly susceptible to the disease, he says.

"We had cultivars that were in the pipeline, but we lost about 80 per cent of them to Psa. It's a setback because we probably would have had a product that's in the market."

Scientists are now looking at the surviving 20 per cent that are Psa tolerant and will pass that tolerance trait on to other red varieties.

Parkes says it probably will not be as successful as Gold3 because of the challenge around its genetics.

"But we have to wait and see."

Parkes says Plant & Food scientists are working on several shapes, sizes and colours of red kiwifruit, ranging from a deep "black red" to a lighter shade.

All share the same two

and others developed holes in the centre, which are also undesirable resistance to pests and diseases is at the top of the list for growers, along with ease of vine growth in different climates.

Parkes says growers are also taking a commercial risk in planting a new variety because they will have to cut out part of their existing orchard to make room for the new kiwifruit. This causes losses in income and cashflow for two to three years until the new plant becomes established and starts producing.

The breeding programme will continue long after the red has been released, Parkes says. Researchers are also working on a new green variety, but a new gold could be some years away because of how new and massively successful Gold3 has been.

"The breeding programme never stops. While we might commercialise a red in the next few years, we are always going to be looking for the next one."

It is thought the red's shelf life is not as long as Gold3's, which can affect marketplace value.

If it could not sell in the market for as many weeks as Gold3, then the red's total value may not be as high.

"But we have some really exciting stuff coming through, so we'll have to see what the reality is. If you were going to hedge your bets, you are probably going to say that a smaller percentage of \$40 billion isn't too bad."

It has to taste good, provide a good eating experience and have a long shelf life for the consumer once purchased.

On the vine, it must meet specifications around size and number, storage characteristics, and small things, such as whether the fruit's end or beak is sharp, which could damage surrounding fruit.

Some fruit also develops cavities in the bottom that provided an easy home for insects, which made them unattractive

"It literally looks like a little green chilli."

Most of the breeding is done by grafting and artificial insemination, where scientists take pollen from a vine with male flowers and spread it on to a separate vine that has female fruit-growing flowers.

On commercial orchards, this practice is carried out by insects. There is a lengthy process to follow before any of these cultivars are considered commercially ready. Both the fruit and the factory creating that fruit—the plant—need to work properly.

"While the red's end product is fantastic, they are still issues with the factory."

"The Gold3 is an amazing factory and an amazing product. I would say that the red is an amazing product, but with the factory, we are just making sure it's okay."

There are also concerns with its supply chain performance because

there's another that gets across the finish line."

The modern kiwifruit was developed from seven generations, or 30 years of breeding, Parkes says. Green, orange, red, gold and purple varieties were grown, including a wide variety of shapes and flavours.

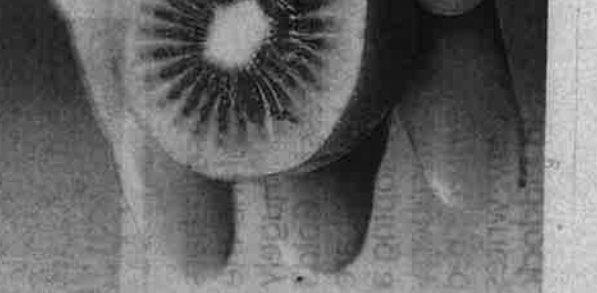
Varieties ranged from fruit that resembles what consumers see in the supermarket, small sausage-shaped green fruit, a gold variety that looked like a nash-pear, and small green grape-like varieties with hard leathery skin and a bitter, grassy taste.

"Most people can't get their heads around the fact that this is all kiwifruit," he says.

One of the more unusual varieties is a hot pepper-flavoured green-skin kiwifruit that he believes developed its taste as a defense mechanism against predators eating its fruit until it

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