

IRRIGATOR ADVICE A FEW MORE THINGS WE'VE LEARNT.

FMG
Advice & Insurance

IRRIGATION
NEW ZEALAND

We're here for the good of the country.



IRRIGATION IS IMPORTANT FOR FARMERS AND GROWERS, AND NEW ZEALAND'S ECONOMY

Irrigation contributes \$5.4 billion to New Zealand's Gross Domestic Product (GDP) with this figure only expected to grow with predictions of it reaching \$8.8 billion by 2021-2022. This contribution helps support the growth of strong and prosperous rural communities across irrigation regions. Due to the importance of irrigation, FMG is committed to providing specialised advice to help make informed decisions in order to avoid losses and minimise disruption.

In the last 5 years FMG has spent an average of \$2.5m a year on irrigator damage. However, the spring 2013 Canterbury windstorms saw this amount increase to almost \$9.4m.

The Canterbury windstorms provided several lessons for the rural community and as a result there has been a decrease in the overall number of irrigator claims along with improvements in getting damaged irrigators back up running again. This is testament to good advice and improved practices having a measurable effect on keeping farms productive. We believe a lot of this comes down to farmers and growers following specialised advice and adhering to good industry practice, something Irrigation NZ and FMG continue to develop every year.

The collaboration of farmers, growers, and other industry partners with Irrigation NZ and FMG helped identify key causes of irrigator damage, both from winds and operational accidents. In order to continue to help irrigator users throughout the country, we have developed this guide on how to mitigate irrigator risks and minimise the disruption should damage unfortunately occur.

Know what you have

Having a comprehensive list of the various components and their location is critical in getting repairs underway as fast as possible. This is known as an asset register. Having the ability to relay specific details to your service company speeds up the response time.

Useful information to include in your asset register:

1. Detailed systems design schematic including pipe/hydrant size, cable size and irrigator length
2. Manufacturer's nozzle chart. This is a critical piece of information when rebuilding your irrigation assets. It contains details about every individual span and can be referenced quickly
3. Record the pump and motor information from the name plate.

Other simple measures include naming or numbering each irrigator with stickers so they are easily identifiable e.g. to tell a staff member that pivot no. 3 has a flat tire on 4th span.

A FEW THINGS WE'VE LEARNT.

If there's one thing we all learnt from the Canterbury windstorms it is the importance of having a plan and being prepared. A lot of the claims we see can be easily preventable with good on-farm practices preventing the claim from occurring in the first instance.

WIND IS THE LEADING CAUSE OF IRRIGATOR DAMAGE

Every year wind damage remains the top cause of irrigator claims accounting for 34% of claims. In spring the frequency and severity of foehn winds rise which increases the risk of irrigators blowing over.

Over half of all wind damage claims occur in spring. Corner arms are especially susceptible to damage during high winds because of their length and angle. We've found that corner arms have been damaged in up to 6% of wind claims.

There are a number of ways to minimise the risk of wind damage.



The importance of having a plan

When a windstorm is on the way having a plan can really ease the pressure. Prior to spring is a great time to review and document your plan. It's just before irrigators will be in full force and any new staff members can get across it. Although it's been a few years since the Canterbury windstorms we can't get complacent as we never know when the next one will strike. When developing or reviewing your plan there are four main areas to consider:

1. Prediction

New Zealand weather patterns are known for being variable and unpredictable. Farmers and growers are increasingly more connected online.

Some of our clients have had great success in using platforms such as MetService and Yr as well as applications such as PredictWind and Windy which allow you to set parameters for wind speed alerts.

For example, if the wind speed parameter was set to 50knots an alert would be received if the winds were to exceed that speed allowing you time to plan accordingly. This lead-in time for high wind helps you make better planning decisions.

2. Authority

There needs to be a clear understanding of who is responsible for monitoring winds and making the final decision to proceed with the action plan. Lines of authority should include more than one person as the person who normally makes the decision may not be on-farm at the time.

As well as understanding who is responsible of what part of the business, include the person who is responsible for:

- monitoring the weather
- making the decision to take action
- getting the irrigators back in action.

3. Action

It's important that all staff understand what the agreed farm plan is if strong winds are on the way. This could include the method of "Point, Park, and Anchor". Everyone should understand their responsibilities and the process. This should also include what happens after the winds have passed and getting back to irrigating.

4. Practice

The winter months are a good time to practice the plan, especially for new staff members who are not familiar with the plan. Just like fire-fighters, the events may be spasmodic, so 'on the job' practice is limited. Therefore, time needs to be put aside to practice the plan. This is also a good time to flesh out any issues within the plan, including any Health and Safety risks. As businesses get bigger the plans get more complex and the importance of practicing it gets even greater.

POINT, PARK, AND ANCHOR

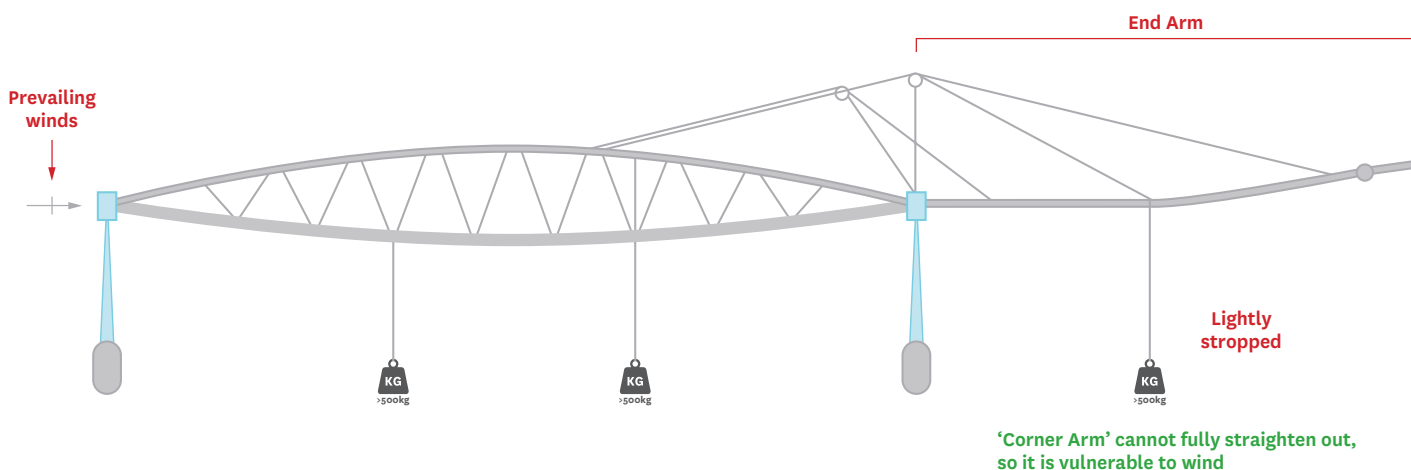
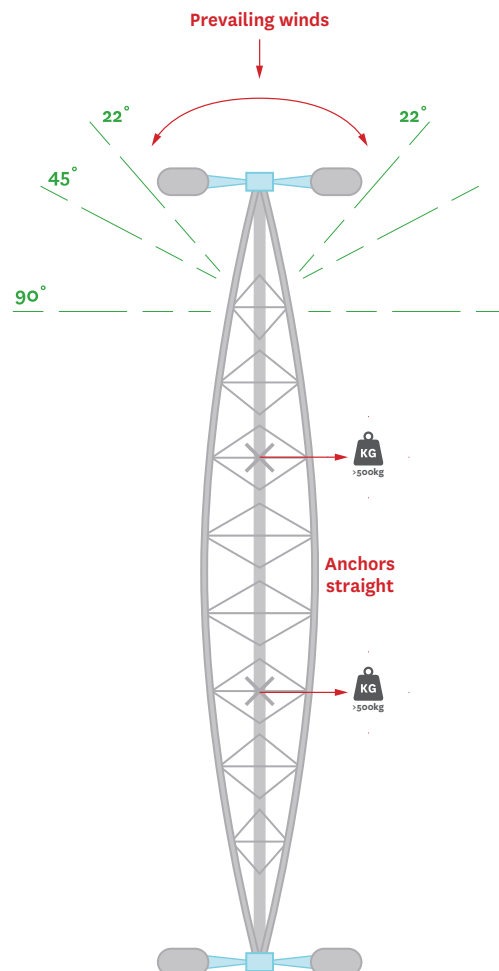
Point

Pointing your irrigator either into or away from the wind (if possible) remains an effective way to reduce damage to your irrigator in high winds. After the Canterbury windstorms Irrigation NZ and FMG worked with farmers and found that irrigators parked in this position significantly reduced the probability of damage. This reduces the surface area exposed to the wind. The worst angle for your corner arms is at 90 degrees to the wind. Irrigation NZ recommends leaving a tolerance of 22 degrees. Every degree after that is likely to create resistance and increase the chance of the irrigator tipping over.

Park

Once it's pointing into the prevailing wind, park it there until the winds dissipate. Liner/lateral irrigators should be installed so that it's pointed down the dominate wind direction. Pivot irrigators should have one or two established parking spaces that are facing downwind.

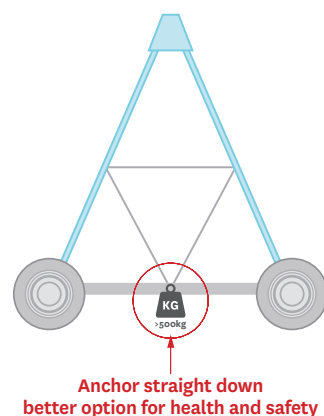
You can now set the irrigators to their safe spot from the technology. It might pay itself off.



Anchor

There are several methods to anchor your irrigator. Tying across the span in the middle of the 'V' brace anchors both the span and the base beam wheels, allows for the anchor points to be spread over a wider angle on the span, and allows for a single ground anchor point beneath the irrigator. Irrigation NZ suggests having movable anchors to secure your irrigator which will allow your team to mobilise a lot quicker to secure the irrigator. Examples of these are concrete blocks (minimum weight of 500kg) or pegs/pins which can be lodged into the ground using a kanga hammer.

Side view



IRRIGATOR IMPACT



Irrigator impact (hit something)

The start of the season is when majority of our impact claims occur. This is often because there are things that may have changed since the last season that increase the risk of damage. These include vegetation growth, changes to the terrain and possible changes in staff.

Almost 1 in 3 claims are from irrigators hitting overgrown vegetation, overhanging branches and stationery items like fences, trees, power lines and buildings. Wear in the pivot can cause sagging and tyre pressure changes can alter irrigator levels—both of which could cause the irrigator to hit a tree or a fence that it wouldn't have previously. Believe it or not, it is also common for irrigators to hit other irrigators.

Map out irrigator pathways

- Clearly map out the irrigator path so staff can ensure other effluent irrigators or Roto Rainer irrigators running at the same time don't collide. We've seen claims where a centre pivot has collided with a Roto Rainer causing significant damage to the end spans.

Have a designated parking area for contractors

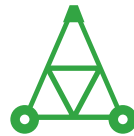
- Inform any contractors where operating irrigators are located and the most appropriate place to leave equipment and vehicles.

Terrain

Changes in the terrain over summer see an increase in claims where irrigator wheels get caught in track ruts or muddy/loose soil. This causes some spans to continue moving while others are stuck, bending and twisting the pivots out of alignment. This can also change the course of the irrigator over time and result in larger claims where irrigators miss bridges or hit buildings.

Check the track to make it back

- Before running the irrigator, walk the track and remove all debris and trim back trees and hedges. This is particularly important before making the first run of a new season, as there will have been some growth since the last time the irrigator was run.
- Walk wheel tracks regularly to check for obstacles and fill any wheel ruts deeper than 100mm. A small piece of work done now can prevent larger damage later.



Running into the irrigator (something hit it)

It's common for other moving items mostly vehicles to hit the irrigator. This has caused over \$1.3m in claims over the last 5 years. This has occurred from both contractors and farmers who have left the front-end loader up when driving under the irrigator. There can be a range of different heights within paddocks. There have been occasions where a tractor has been able to fit under an irrigator by a few feet in one part of the paddock but then collided into it in another.

Have a standard rule that does not allow anyone to drive under the irrigator

- This simple rule could save a potential claim and damage to two essential pieces of equipment to your tractor and your irrigator.



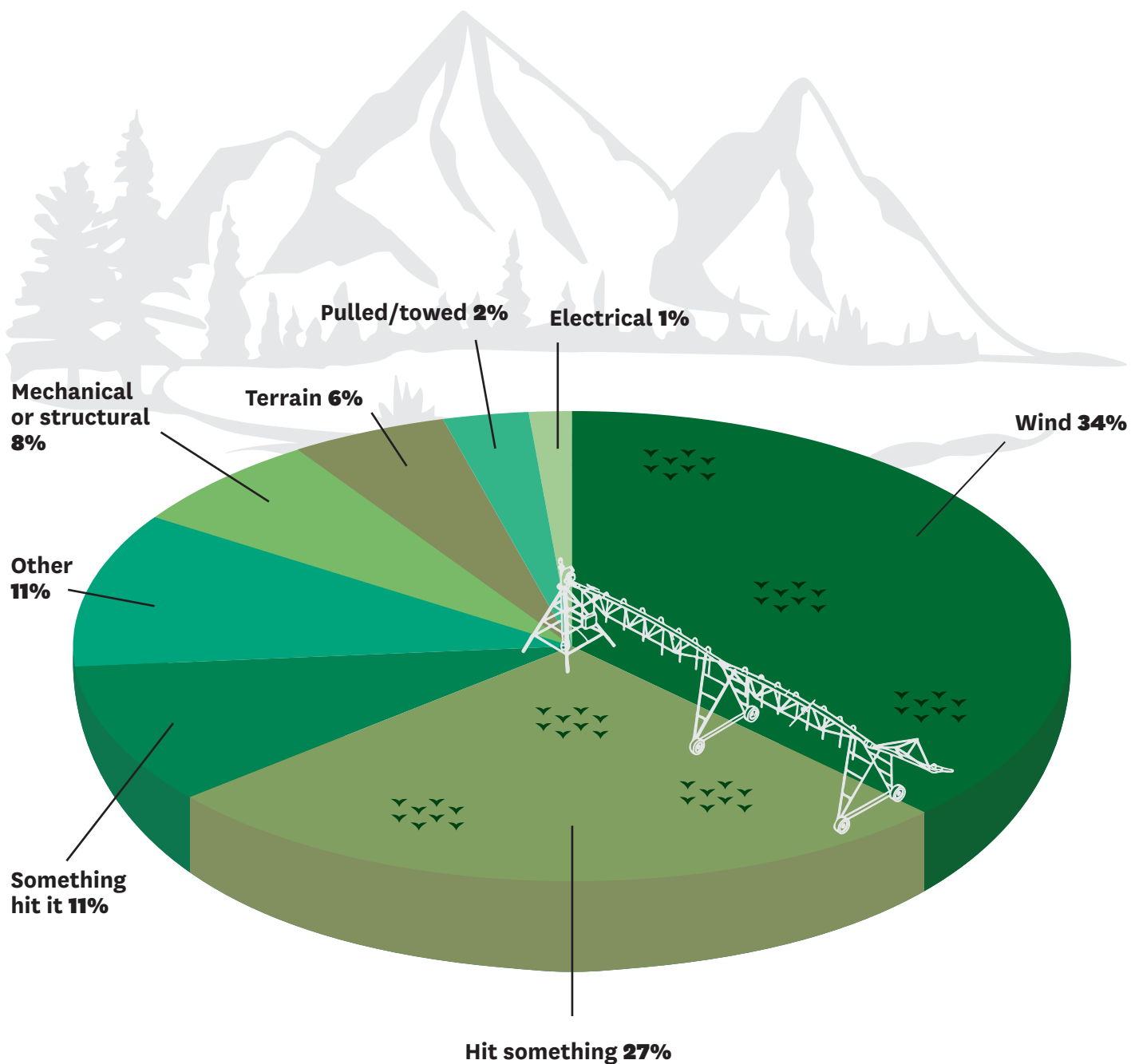
Mechanical/Structural

Almost 8% of irrigator claims are from structural and mechanical failure, particularly damage to the pipework or hoses. Changes to the tension in the cable can also cause structural damage by either becoming too loose, causing the pivot to give way, or extra tension in the line, causing one span to drop an arm. Different tyre pressure will cause other spans to drag and put extra pressure on the gear box resulting in it failing.

Weekly Inspections

- Inspect the irrigator weekly (at same time check tyres) for loose cables and bolts, bent frames, leaking/rusted pipes/joints etc and repair where necessary before they put the irrigator out of action.

TOTAL AMOUNT OF CLAIMS



Additional resources:

Irrigation New Zealand

irrigationnz.co.nz

FMG

fmg.co.nz/advice

NIWA

niwa.co.nz

MetService

metservice.com

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