



Fans for life.

Your crop – you've so much invested in its success. **Make sure you protect it.**





Once you've seen what a FrostBoss® Frost Fan can do

you'll become a fan for life.

The need for essential frost protection of your high value crop goes without saying – the crucial question is however **'where should I turn?'** There is one solution and one supplier in particular who stands head and shoulders above the rest. FrostBoss® Frost Fans bring a whole new level of sophisticated, innovative solutions, grower-centric support and service that will make you a FrostBoss® Frost Fans fan for life.

Introducing FrostBoss®.

FrostBoss® Frost Fans have been manufactured in New Zealand since the 1990s. The company has a significant research and development programme focused on improving the efficiency and reliability of the FrostBoss® range and the FrostSmart® monitoring web app. This includes comparative testing and the use of Computational Fluid Dynamics (CFD) analysis to understand exactly how our FrostBoss® machines perform.

Protecting crops around the world.



Scan to find
a distributor
near you.



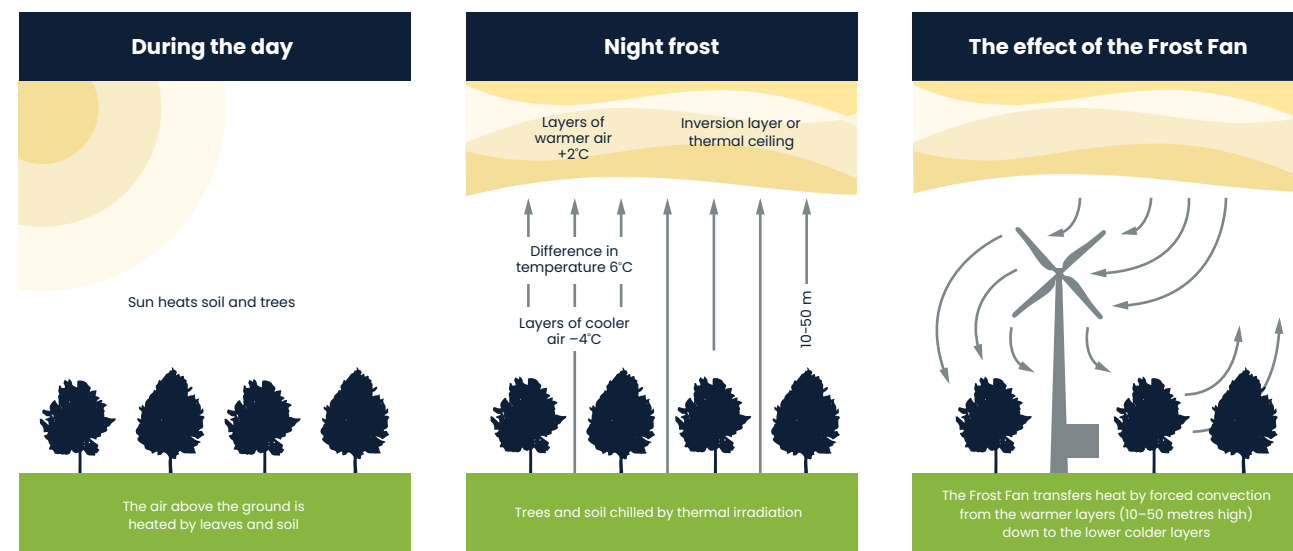
FrostBoss® Frost Fans.

The difference lies in the blades and the number of them.

The diameter, twist, chord and thickness distribution all determine the blade efficiency. FrostBoss® blades have been designed with true constant pitch along each blade from tip to root. The result is the wind momentum coming off the fan is more consistent, minimising any air turbulence and the resulting wind stream maintains integrity further from the fan.

How Frost Fans work.

Frost Fans work by drawing down warmer air from the inversion layer and using it to warm up the air surrounding the crop on nights and early mornings, when the temperatures are low enough to cause damage. The air introduced from the inversion layer is generally also drier than the air surrounding the crop, further reducing the heat loss from the crop and hence the potential for damage.



Our blades set us apart™.

When we set out to design the FrostBoss® composite fan blade we had three goals – low noise, excellent coverage and fuel efficiency. FrostBoss® composite fan blades are incredibly strong with an aerodynamic design, which makes the entire blade length from hub to tip produce a uniform wind momentum. This optimises the coverage area at an efficient low engine speed of 1760 – 1800rpm at which the maximum torque of the engine is generated.

FrostSmart® monitoring.

FrostSmart® monitoring is a 'must' if you don't live on-site or you're running multiple FrostBoss® machines. Alarms can be generated in the form of text messages. Frost Fan status along with tower temperature, engine rpm, battery status, wind speed and trip hours are sent to your Lancel-hosted customer-specific website. By far the majority of our customers subscribe to FrostSmart® monitoring when they purchase a FrostBoss® Frost Fan.

Stock availability.

We hold physical stock of machines and parts at all our Service Centres. We don't indent stock. That means shorter lead times for installation and highly responsive after-sales service and support.

Bird/vermin-proof engine cabinets.

The last thing you want is a machine fault caused by rodent damage or an engine fire due to a bird's nest. That's why we designed a fully enclosed and lockable engine cabinet to resist birds and rodents.

Integral fuel tank.

FrostBoss® machines feature a 490-litre integral diesel fuel tank. The integral fuel tank provides greater security with a lockable fuel cap and no readily accessible fuel lines.

Performer from dusk 'til dawn.

The Frost Fan needs to blow as much air as it can, over the greatest distance possible. This will give the most economical coverage for the Frost Fan. In order to reach the greatest distance, the fan needs to produce a strong wind momentum, which is the product of both the wind speed and the volumetric flow rate of the wind.

The coverage, or effectiveness of a Frost Fan depends not only on the machine's ability to move air, but also the warmth of the inversion temperature and the degree of frost that is present. FrostBoss® machines typically cover 6-8 hectares depending on the conditions.

Crop protection should be seen, not heard.

Commercial vineyards, orchards and residential/lifestyle areas can be uneasy neighbours. Issues related to noise pollution and the disputes it can cause are something growers just don't need. Noise resulting from the operation of a Frost Fan is derived from two primary sources, the fan and the engine.

Noise from the FrostBoss® engine has been attenuated by designing an effective engine enclosure and muffler.

Noise from the fan results from the tip speed of the blades and the efficiency of the blades as they pass through the air.

The blades are pitched to run as slow as possible while operating in the fuel-efficient region of the engine power curve.

The advantage of the FrostBoss® blades is that the more efficient blade shape works to increase the airflow of the fan, at a lower speed and reduced noise level. The blade design and operating speed have been optimised to provide maximum coverage and minimum noise.

FrostBoss® C49 machines produce 10dB less @ 300 metres than some 2-blade machines on the market... a 10dB difference is perceived by the average listener to be half the noise.

High value crop protection for high value crops.

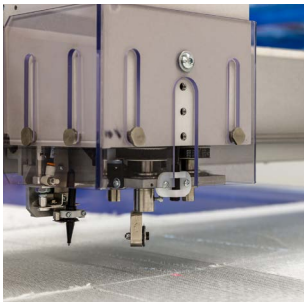
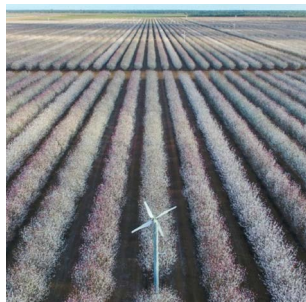


FrostBoss® Frost Fans provide innovative frost protection solutions to growers around the world. From its base in Hawke's Bay, New Zealand, the business specialises in Frost Fan design and manufacture, as well as the subsequent field placements, consent applications (if required), installation and servicing.

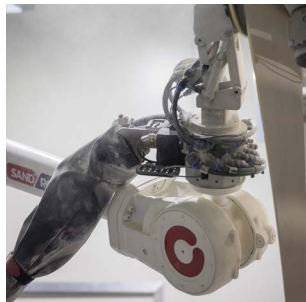
Manufacturing is conducted in a modern, purpose-built facility including fan blade manufacturing, tower fabrication and machine manufacturing. In addition to the supply and installation of FrostBoss® Frost Fans, we service and upgrade most makes of wind machines.



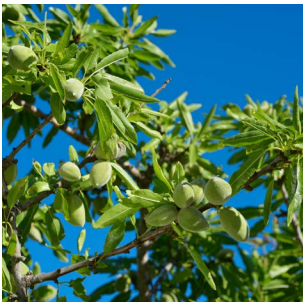
The most popular Frost Fan in New Zealand and Australia.



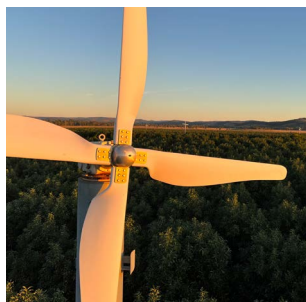
An environment to grow
Our social responsibility.



High value crop protection for
high value crops.



We'll go the **extra mile** to give you peace of mind.



Our blades set us **apart™.**



**An environment to grow.
Our social responsibility.**

At FrostBoss®, we care about the environment and the communities in which we operate. We were the first company to develop, manufacture and promote multi-blade Frost Fans, delivering quieter machines for our communities and fuel-efficient machines for our customers without compromising coverage.

FrostBoss® Frost Fans help our customers to grow crops sustainably by reducing crop loss

and maximising yield and quality. FrostBoss® machines are fuel-efficient and have an integrated Auto Start/Stop function based on pre-set temperatures and an anemometer so they only run when they need to. Our service trucks are equipped with oil extraction and transfer pumps for efficient and environmentally friendly engine and gearbox oil changes. We have a recycling programme, which includes used oil.

Our focus.

Call it focused or single-mindedness, but what is sure is that Frost Fans are all we do – and deliberately so. This sole purpose means our clients receive undivided attention to detail in all aspects of the journey – from consultation and installation to all forms of ongoing support and monitoring, including relocating your fans if required.

This is backed by a dedicated and passionate team of professionals who are committed to building ongoing partnerships with clients resulting in positive outcomes.

Because Frost Fans are all we do, we use sophisticated and specialised equipment, some of which is unique to us. This advantage maximises your fans' effectiveness.

Finally, we're proud of our reputation which we worked hard to establish over the years. This reputation was built on honesty, integrity and a fair bit of hard 'yakka'. But ultimately – we gain immense satisfaction from knowing when the sun sets and the night cools, our customers will sleep well with the knowledge that their crop is protected.

Warranty.

FrostBoss® Frost Fans are guaranteed against defects in materials and workmanship for a period of four years from the date of installation when operated under normal conditions, provided annual maintenance has been carried out by an authorised FrostBoss®

service agent. This is a plain English, no-nonsense, non-diminishing Manufacturer's Warranty covering parts and labour. There are no carve-outs, with all machine components covered under the warranty*.

** Excludes standard service consumables.*

Calculate the return on your FrostBoss® Frost Fan investment (ROI).

FrostBoss® machines provide affordable and ongoing insurance. 'Mother Nature' is the biggest risk for growers.

The FrostBoss® C49 (4-blade) is the most popular Frost Fan in New Zealand and Australia, protecting a wide range of crops including wine and table grapes, nuts, citrus, stone fruit, pipfruit, berries, kiwifruit, avocados, mangoes, even instant lawn and grass... anything that can be damaged by frosts.

Run your numbers through the ROI calculator at frostboss.com/pricing and, if you like what you see, give us a call.

The calculator amortises the capital cost of FrostBoss® C49 machines over a 20-year period to provide the investment gain per annum, annual investment and ROI for the nominated block size and per hectare. The results are based on typical low range and high range fan coverage areas.

For most situations, active protection against frost and cold injury provides compelling returns. You can use the tool on your desktop, tablet or smartphone.

A woman wearing a white protective suit and a clear face shield is working on a large, curved, green object. She is using a tool to work on the surface of the object. The background is a white, industrial-looking structure.

Row after row, crop after crop, season after season

**we'll go the extra mile to
give you peace of mind.**

Our people.

Passion is an overused word these days, which is just as well because it doesn't really capture our approach to what we do. Each one of us at FrostBoss® derives great satisfaction from seeing our fans save our clients' crops from frost – crops that go on to become a renowned vintage or top earning export.

Our people are passionate about what they do. Through designing, manufacturing and servicing FrostBoss® machines, they help our clients grow. Significant input from a former Team New Zealand America's Cup Research Engineer, Richard Karn, saw the launch of the FrostBoss® C49 (4-blade) Frost Fan in 2009, which has grown in popularity to become the best-selling Frost Fan in New Zealand and Australia.

Working with you.

The six-step process.

From the initial point of contact, we work closely with our growers to find the best frost mitigation solution using the efficient and quiet FrostBoss® Frost Fan. At the outset, we'll ask you to supply us with a site map and any relevant block information, and in return we will supply you with a preliminary FrostBoss® Frost Fan layout exclusively for your block.

Once the order is confirmed, we will:

- 1.** Visit your site to discuss all the variables that can affect FrostBoss® Frost Fan layouts; identify final machine placements (if not already completed) in consultation with you; and provide you with a map showing the agreed GPS locations of all fans (if required).
- 2.** Complete council consent applications (if required) on your behalf.
- 3.** Prepare machine sites and pour concrete plinths.
NB: We will require you to provide a permanent unimpeded 3.0 metre wide access by way of gravel track or similar to the Frost Fan site for initial access. Once installed, ongoing access to your FrostBoss® machine(s) will be required for re-fuelling, routine maintenance and annual servicing.
- 4.** Install and commission FrostBoss® machines, including FrostSmart® monitoring.
- 5.** Perform machine handover briefing with you and your team (including Owner Operator Manual).
- 6.** Be available for the lifetime of the machine(s) for regular servicing and repairs. We have the specialised equipment required to service the tower, engine and blades and can offer ongoing service post the warranty period.



NZ: +64 6 879 8312 | AUS: 1800 797 629
info@frostboss.com
frostboss.com

FrostBoss® is the global brand of New Zealand Frost Fans Limited and Australian Frost Fans Pty Ltd.
Our blades set us apart™ is a trademark of New Zealand Frost Fans Limited.