

*Farming without harming,  
together we'll make it better.*

[www.agrestore.co.nz](http://www.agrestore.co.nz) | 0800 57 16 50

# WHY WE NEED THE N&P REDUCTION PATHWAY™ IN A NUTSHELL



Nitrous oxide gas emitted from soils causes 10.9% of the 42.9% climate change effect attributed to NZ agricultural practices<sup>1</sup>. Of that 10.9%, 1.7% is attributed to nitrogen fertiliser.

Too much applied nitrogen fertiliser (natural or artificial) causes de-nitrification. Some of the resulting nitrates go out in the waterways. Additionally, where soils are already compact, nitrogen feasting bacteria needing oxygen, in anaerobic (no oxygen) conditions, steal an oxygen molecule from the nitrate, thus forming nitrous oxide. **This is 265-298 times more potent** for climate change effect than carbon dioxide<sup>2</sup>, meaning it has 265-298 times the heat trapping capacity than carbon dioxide. Given these facts, we must consider that over-fertilisation with nitrogen causes global temperatures to rise more quickly and severely than if emissions were reduced or eliminated.

As Dr Jan Wright educates us in her report<sup>3</sup>, nitrous oxide gas lasts around 121 years before it dissipates versus 12 years for methane. Carbon dioxide does not break down in the atmosphere and is why planting trees via afforestation / riparian planting is so vital - plants breathe in carbon dioxide, naturally helping reduce the quantity of heat trapping gas that reaches the atmosphere.



Too much nitrogen fertiliser applied (natural or artificial), depletes soil carbon levels<sup>4</sup>, thereby also reducing our soil's water holding capacity, measured using soil organic matter percentage. This weakens drought resilience and increases unnecessary reliance on irrigation. Decreasing organic matter percentage can lead to desertification and human extinction.

NZ is part of the **dynamic 'P4 per1000' initiative**<sup>5</sup>, an adjunct to the Paris Agreement, instigated by France at the COP21 2015 (Paris). This initiative focuses on the sequestering, or building up, of organic matter percentage in the world's agricultural and horticultural soils as a vital combatant against global warming risk.



Too much nitrogen fertiliser applied goes out as nitrate into fresh waterways where it ends up mixing with coastal sea water, propelling conditions for algal blooms. As the algae decompose, less dissolved oxygen is available for fish and all other aquatic life. Too much phosphorus fertiliser does the same in fresh waterways. Additionally, nitrogen contamination of private water bores and public drinking water supplies is increasingly of concern across New Zealand regarding human health<sup>6</sup>.

<sup>1</sup>New Zealand Productivity Commission, (2018), Low-emissions economy: Final Report, Aug 2018, pg 30.  
<sup>2</sup><https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>

<sup>4</sup><https://grist.org/article/2010-02-23-new-research-synthetic-nitrogen-destroys-soil-carbon-undermines/>  
<sup>5</sup>[www.4p1000.org/sites/default/files/francais/tableau.partenaires\\_et\\_membres\\_13\\_decembre\\_2018.pdf](http://www.4p1000.org/sites/default/files/francais/tableau.partenaires_et_membres_13_decembre_2018.pdf)

<sup>6</sup><https://www.stuff.co.nz/environment/110205437/is-nzs-drinking-water-dangerous-major-international-study-links-nitrates-with-bowel-cancer>

# N&P REDUCTION PATHWAY™ THE 5 PILLARS

## 1. AWARENESS

- Is the Global Warming Potential (GWP) of Nitrous oxide more than Carbon Dioxide?
- High N & P fert run-off = reduced dissolved oxygen in waterways

## 2. EDUCATION

- Agriculture's contribution to heat trap, immediate mitigation strategies
- N&P reduction, environmental & monetary gains for farmers and growers

## 3. TRANSITION

- Restorative Agriculture & Horticulture
- Staged reduction of N&P volumes to plant uptake capacity

## 4. MONITORING

- Restorative Ratings 0-10 NZ innovation
- Monitoring not modelling

## 5. PROOF POINTS

- Better economics for growers & farmers, food density, taste & better health
- Customer assurance of safer soil, water, air & food security

**A Breakthrough In Self-Monitoring Each Family Agribusiness Ecosystem**

**More Sophisticated Data Level Improving Traceability & Transparency**

**Improved Structure For Guardianship Accountability Bringing Peace Of Mind**

Our team at AgRESTORE™ take great pleasure in presenting

# Orchardists or Farmers Name

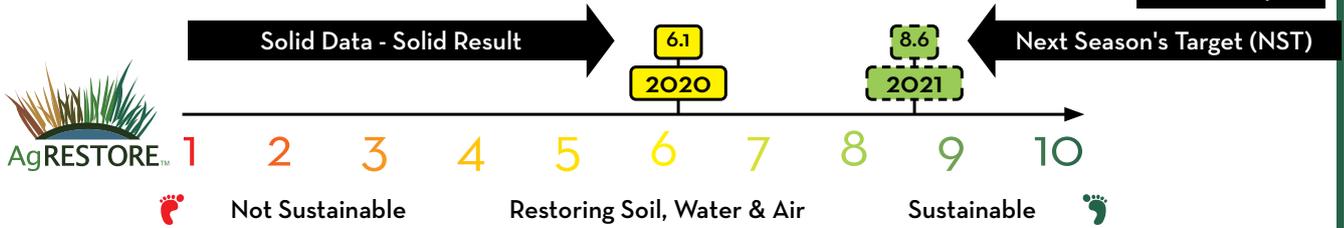
Of

ORCHARD OR FARM NAME

Physical Address  
Selling food to  
GPS Co-ordinates

NEW Enviro-  
Economic  
Metric for NZ  
Consumers &  
Food Producers  
to connect on  
and combat  
heat trap

this certificate, evidencing your current restorative effort to improve sustainability



Name.....

Signature.....  
on behalf of AgRESTORE™

Date.....



Name.....

Signature.....  
on behalf of Company A

Date.....

The N & P Reduction Pathway™ assists farmers and growers by addressing the following:

### 1. Over-fertilisation

N & P loading is reduced, while likely increasing production and economic gains.

### 2. Social License to Operate (SLO)

The system can contribute to the SLO for any agricultural enterprise by detailing the past, present and future environmental impact and restoration efforts intended to be taken.

### 3. Customer Assurance

Printed on product labels, the NST aims to provide insight into the producer's farming or growing sustainability status and informs customers making environmentally conscious purchasing decisions.

### 4. Environmental Compliance

The rating certificate could be incorporated into any Farm Environment Plan.

### 5. Monitoring and Modelling

Strong monitoring efforts provide a foundation for effective data-driven predictive modelling that can assist in better future decision making.



“When I first became aware of the AgRESTORE™ philosophy I immediately could see the great advantages of using this system and was happy to be one of the first farms to trial the monitoring and reporting for this program.”

**PETER KRIEGER**

Ex Tatua Supplier, Waitoa, Waikato

