

Decarbonising vegetable growers around New Zealand

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Today's topics



What is the current state of the covered cropping industry



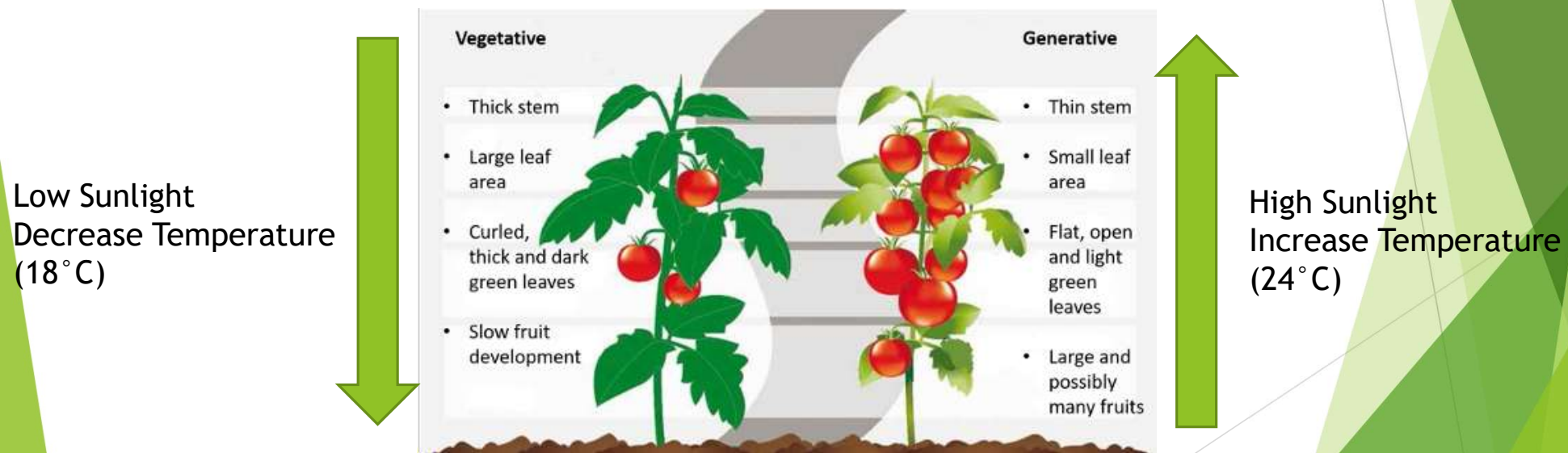
What are the major challenges growers are facing



The opportunity for Geothermal in Horticulture

What is covered cropping

- ▶ Covered Cropping is when plants are grown underneath a structure to provide additional protection from the outdoor elements.



Why am I here?



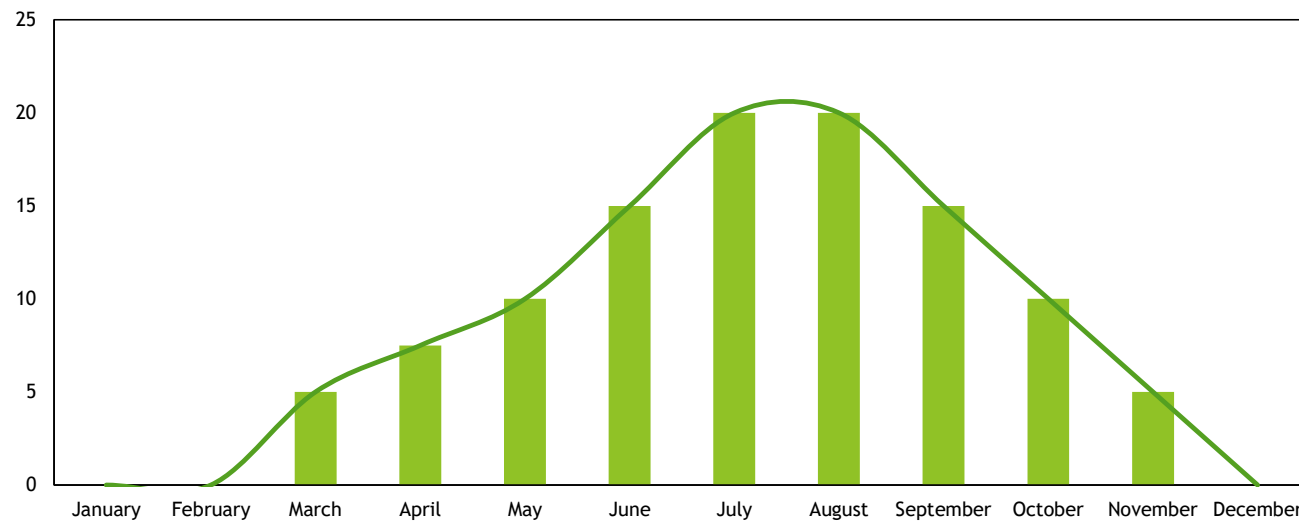
- ▶ Support growers to build their knowledge
- ▶ Support growers exploring more energy efficient practices & alternative low emissions fuels
- ▶ Future proof the industry
- ▶ Increase engagement

State of industry

- The main focus for our work is small/medium growers (0-5Ha) who are struggling
- Currently a risk is small to medium growers exiting the market due to:
 - High costs, particularly energy making up to 50% of these costs
 - Changing regulations and consenting issues
 - Fluctuating energy prices
 - Aging workforce and assets
- The growers are price takers, the market sets the price meaning it is not easy to offset costs, price does not increase according to costs.
- All of this impacts New Zealand's food security, maintaining this is key!

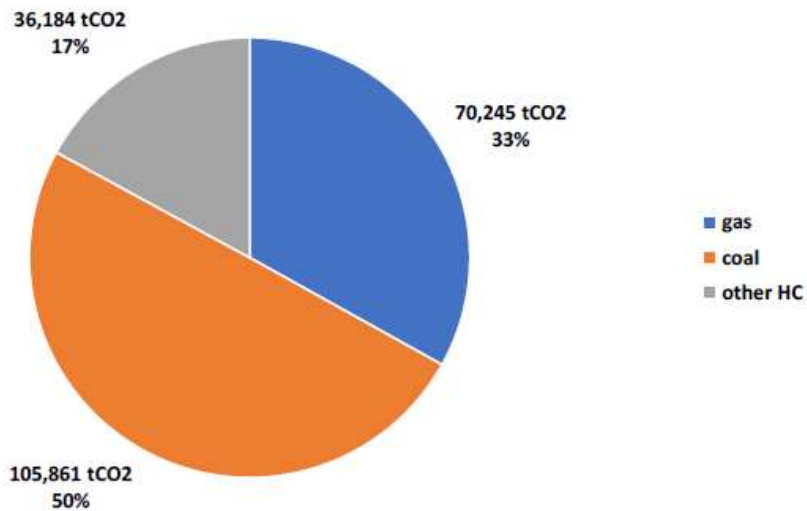
Energy within the Industry

Typical glasshouse energy profile

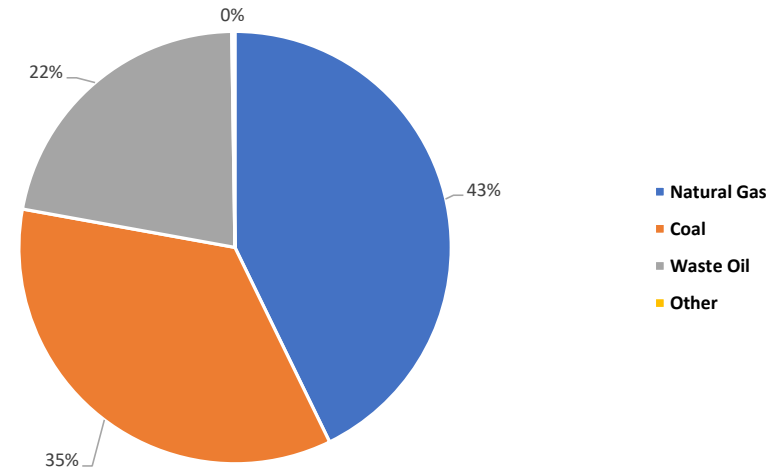


Emissions within the Industry

Summary of Greenhouse Emissions (tCO₂)
by fuel type 2019



Summary of Greenhouse Emissions
(tCO₂) By Fuel Type 2024



Evolving the Industry



Growing more
efficiently



Relocating to the
source of heat



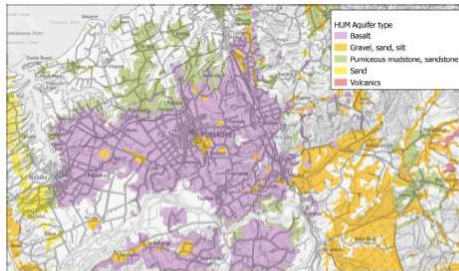
Collaboration across
industry

Relocating to the source of heat

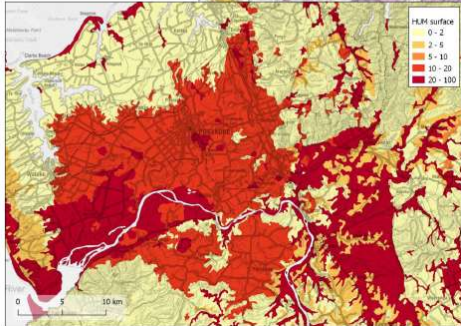
- ▶ NZ Gourmet Mokai has 12HA of tomato, capsicum and cucumber glasshouses.
- ▶ Uses direct use steam from Mokai Geothermal site
- ▶ Obtains cheap electricity from nearby geothermal power plant
- ▶ The main disadvantage is lack of CO₂ available from geothermal when compared to natural gas.



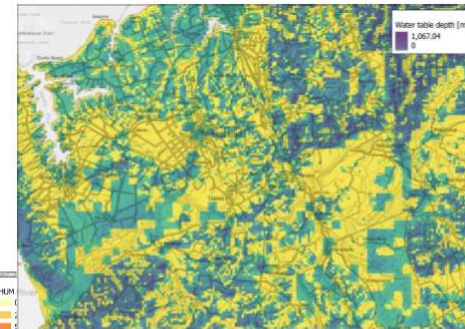
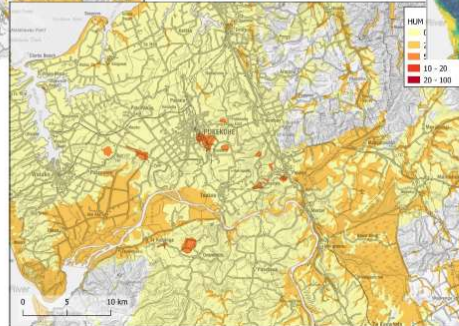
Aquifer type



Hydrological unit at surface



Hydrological unit at subsurface



Depth to water table

Potential for In-direct geothermal use in New Zealand

Aquifer modeling around Pukekohe conducted by GNS Science

Conclusion

- ▶ The current state of the industry is difficult for growers and the costs associated with covered crop growing are higher than ever.
- ▶ One of the key tools for growers is to find cheap, reliable energy sources which can be found through geothermal energy.
- ▶ To access this, the industry needs to support growers on there transition and encourage/incentivize industries to use these technologies and make them more affordable.
- ▶ **The industry needs to move forward together to secure New Zealand's food security**