

AI: Your New Growing Support Tool

Stefan Vogrincic
Grower2Grower /
Covered Cropping NZ

The logo for Grower2Grower features the words "GROWER" and "GROWER" in a dark brown, hand-drawn, sans-serif font. Between them is a large, stylized number "2" that is bright green and has a textured, grass-like appearance.

Opening Comments – AI is a support tool

- Today I'm going to talk about something that I think has become increasingly important in our industry – artificial intelligence.
- What I'm going to show you today isn't really about how **AI** works. It's about how **we, as growers, can actually use it.**
- I'm going to show you an example of how you may use **AI** to help with crop decisions, research, analysing information and to challenge thinking.
- And I'm also going to talk about where I think **AI** has limitations (us) – because I don't think **AI** replaces the grower."

What AI is good at:

- **AI is particularly useful for growers when you need to:**

1. Analyse

- Look at crop data and analyse: Heating, Irrigation, Plant Growth
- Look at Nutrient Analysis
- Find patterns.
- Challenge assumptions.

2. Research

- Investigate pests, diseases, products and technologies.
- Compare different approaches.
- Help identify what questions need to be answered.

• 3. Challenge your thinking

- What am I missing?
- What else could cause this?
- What would you do differently?
- Argue against my conclusion.

The biggest danger

- **AI can sound very confident when it is wrong.**
- **The less experience you have, the more carefully you need to check the answer.**

This is really important.

AI can be impressive, but it can also be misleading. The biggest risk is that it often **doesn't sound wrong**.

Experienced growers will read an answer and think, "*Hang on—that doesn't make sense.*" They have experience to question it.

That's why I don't think AI will replace experienced growers. The real risk is people trusting AI without challenging it.

I don't say, "**Ask AI what to do.**" I say, "**Use AI to help you think.**"

Bad prompt vs
good prompt.
Don't just ask AI for
an answer. Give it
the context.

BAD PROMPT ❌

- "My tomato crop has yellow leaves. What's wrong?"

GOOD PROMPT ✅

- My heated greenhouse tomato crop has yellow mottled leaves in the top of the plant
- Location: ____ Date: ____ Variety: ____
- Plant age: ____ Truss: ____ Stem: ____
- Leaf length: ____ Fruit load: ____ Fruit weight: ____
- EC: In ____ / Out ____ pH: In ____ / Out ____
- Climate: day temp, night temp, (24 hr temp)
- Light: last 7 days
- Issue: Drain pH has risen from 6.0 to 6.8 over 3 weeks. Interveinal chlorosis. (*Paste latest nutrient analysis.*)
- Questions for AI:
 - What are the **five most likely causes**? What **additional information** would you need before making a diagnosis?
 - What would you check first?

2

Demonstration: Can AI diagnose my crop?

AI Prompt Example – INPUT

- **Crop**
 - Merlice on Maxifort (Tomatoes)
 - Planted 21 March (NZ autumn)
 - Harvesting Truss 7+
- **Climate**
 - Light: 5,500 J/cm² (last 7 days)
 - Day: 18.5°C | Night: 15.0°C | 24 hr: 17.5°C
 - CO₂: 650 ppm
- **Crop Measurements**
 - 14 leaves/stem
 - 22 fruit/stem (2.3 stems/m²)
 - Stem: 11.5 mm
 - Leaf: 490 mm
 - Fruit weight: 135 g
 - 4 fruit/truss
- **Ask AI:**
*"Is this crop balanced? What concerns you? **What information am I missing?**"*
- **Audience:** ***What is this crop telling you?***

AI - Response

- **What the numbers suggest**
- **5,500 J over 7 days** (about 785 J/day) is reasonable winter radiation.
- **17.5°C average** is sensible for that light level.
- **650 ppm CO₂** is acceptable but not exceptional. It's enough to improve photosynthesis but not enough to completely overcome winter light limitations.
- **14 leaves/stem** is on the high side for this stage.
- **490 mm leaves** are relatively long.
- **11.5 mm head** initially sounds slightly weak, but in the context of the rest of the crop, it may actually be **too active for the available light**.
- **Where I think the crop is** **The crop doesn't strike me as weak—it strikes me as too comfortable.**
- It has plenty of leaf, a reasonably thick growing point, only four fruit per truss, yet fruit weight is only **135 g**.
- Normally, if the head was truly in balance with the available assimilates, I'd expect either: stronger fruit sizing, or a noticeably finer, more reproductive head.
- Instead, the plant seems to be allocating more resources to maintaining the growing point than to filling fruit.

AI - response

- **For an autumn-planted NZ crop**
- By this stage I'd generally expect to see: a slightly finer head, slightly shorter leaves, stronger fruit fill,
- and a crop that's clearly directing assimilates into the fruit rather than maintaining a lush apex.
- That doesn't mean starving the plant, but I would want it to be **leaning a little more reproductive** than your figures suggest.

My concern

- The biggest concern isn't that the crop is vegetative in the classic sense—it's that the balance between vegetative growth and fruit demand isn't optimised for the available winter light.
- The plant appears to have enough vigour to keep producing foliage, but not enough surplus assimilate to size fruit properly. In New Zealand's winter, that's not where you want to be.

What I'd look at

- If I was consulting on this crop, I'd be asking whether you could gently increase the reproductive pull by:
- achieving a stronger pre-morning warm and a faster morning temperature rise, **avoiding prolonged cool, humid mornings,**
- ensuring irrigation timing encourages early transpiration, maintaining adequate but not **excessive nitrogen,**
- and avoiding anything that encourages unnecessary leaf expansion.

AI Response

- **My question to AI: how do I make the fruit bigger?**
- **1. Improve the morning temperature profile (highest priority)**
- If the crop sits at 14–15°C for too long after sunrise:
- photosynthesis starts slowly, sugar export to the fruit is delayed, cell division early in fruit development is reduced, and final fruit size suffers.
- I'd rather see a good pre-morning warm and a rapid rise to 19–20°C soon after sunrise than a higher average 24-hour temperature.

AI also said check:

Roots, Irrigation Strategy, **Nutrition Balance** and more:

This is why crop registration is so important!

AI as a second opinion

- **Don't ask AI to make the decision, Ask:**
 - Here is what I think. What am I missing?
 - Challenge my conclusion.
 - Give me three alternative explanations.
 - What evidence would prove me wrong? *(especially important in the previous example as I did not enter irrigation figures)*

This is probably how I would summarise my own use of AI:

- I don't use it as the final decision-maker.
- I use it as a second opinion.
- And sometimes I don't even agree with it.

Ask AI about ?

A few examples:

- **Disease management**
- **Insect management**
- **Fruit Loading**
- **Stem Density**
- **Nutrition Balance**
- **Temperature Strategy**
- **Irrigation Strategy**

What AI is good at

AI is your:

 **Thinking partner**

 **Research assistant**

 **Data analyst**

 **Communication assistant**

 **Devil's advocate**

What AI can't replace

- **Experience**
- Knowing when something doesn't feel right.
- **Observation**
- Seeing what the data doesn't show.
- **Judgement**
- Knowing what information matters.
- **Context**
- Understanding the greenhouse, crop and season.
- **Responsibility**
- Someone still has to make the decision.

Questions and Thankyou



**Grower2Grower Golf Day – Raising Funds for the
Cancer Society Friday the 11th of September
2026 Pukekohe Golf Club**

GROWER **2** GROWER