

Notes on Verification and Avoiding Hallucinations

AI Hallucination Training — Agronomy Context

This training resource accompanies the AI verification tutorial. Each document presents a verbatim AI-generated response to an agronomic query, followed by a structured breakdown of the claims it contains, the risks of acting on unverified information, and the trusted sources that should be consulted before any real-world decision is made.

Every important agronomic claim should be verified against a trusted, independent source before action is taken.

- Document 1 — Pesticide Application Guidance
- Document 2 — Fertiliser and Nutrient Recommendations
- Document 3 — Variety Selection
- Document 4 — Growth Regulator Use

Verification Document 1

Pesticide Application Guidance

Query:

Can I apply "BlightGuard Max" to my potato crop this week to control late blight, and what interval should I leave before harvest?

AI-generated response:

Yes. BlightGuard Max is approved for late blight control in potatoes at 1.5 L/ha. It can be applied up to 2 days before harvest, with a maximum of 5 applications per season. The product is rainfast after 30 minutes and is cleared for aerial application on all potato crops.

1.

Product approval and legal use

Claim:

"BlightGuard Max is approved for late blight control in potatoes..."

Risk:

The product may not exist, may not be approved, or may not be approved for this crop or use.

Verify using:

- Health and Safety Executive (HSE) — Pesticide Register (CRD)
- AHDB crop protection guidance

Check:

- Is the product registered in the UK?
- Is it approved specifically for potatoes and late blight?

2.

Application rate

Claim:

"...at 1.5 L/ha."

Risk:

Incorrect rates can lead to crop damage, poor disease control, or legal breaches.

Verify using:

- Product label (the legal document)
- Health and Safety Executive — CRD pesticide database

Check:

- What is the approved dose range?
 - Does the rate vary by growth stage or resistance management strategy?
-

3.

Pre-harvest interval (PHI)

Claim:

"It can be applied up to 2 days before harvest..."

Risk:

PHI errors are critical compliance breaches and can result in residue violations and rejected produce.

Verify using:

- Product label (primary legal source)
- Health and Safety Executive — CRD

Check:

- What is the legally required PHI?
 - Are there restrictions by crop type or intended market?
-

4.

Maximum number of applications

Claim:

"...with a maximum of 5 applications per season."

Risk:

Exceeding label limits can breach resistance management guidance and regulatory requirements.

Verify using:

- Product label
- FRAC (Fungicide Resistance Action Committee) guidelines

Check:

- What is the maximum permitted number of applications?
 - Are there restrictions on consecutive use or mode-of-action rotation?
-

5.

Rainfastness and performance claims

Claim:

"The product is rainfast after 30 minutes..."

Risk:

Unverified performance claims may lead to spray failure and disease escalation.

Verify using:

- Manufacturer label and technical data sheet
- ADAS
- NIAB independent trials

Check:

- Is rainfastness supported by independent evidence?
 - Under what temperature and humidity conditions does this apply?
-

6.

Application method — aerial application

Claim:

"...cleared for aerial application on all potato crops."

Risk:

This is particularly high-risk. The UK heavily restricts aerial pesticide application and this claim may be entirely false.

Verify using:

- Health and Safety Executive (HSE)
- National Pesticide Legislation (Plant Protection Products Regulations)

Check:

- Is aerial application permitted at all in this context?
 - Are there specific exemptions, buffer zones, or seasonal bans?
-

Practical Verification Workflow

1. Read the full AI-generated response carefully (as quoted above).
2. Break it into individual claims.
3. Verify each claim against a trusted source — label, HSE, AHDB.

4. Do not apply or advise until all claims are confirmed.

Verification Document 2

Fertiliser and Nutrient Recommendations

Query:

My wheat crop is at GS30 on a medium sandy loam with an SNS index of 1. What nitrogen rate should I apply, and how should I split it?

AI-generated response:

For winter wheat at GS30 on a sandy loam with SNS index 1, apply 220 kg N/ha total. Split as follows: 80 kg N/ha at GS25, 100 kg N/ha at GS30–31, and 40 kg N/ha at GS39. This is a standard RB209 recommendation and applies to all milling and feed wheat varieties. No further soil testing is required if you follow this programme.

1.

Total nitrogen rate

Claim:

“...apply 220 kg N/ha total.”

Risk:

Nitrogen recommendations depend on soil type, previous crop, organic matter, and yield potential — not a single figure.

Verify using:

- RB209 (AHDB Nutrient Management Guide) — the primary UK reference
- AHDB online N rate calculator

Check:

- What does RB209 recommend for this specific soil type, SNS index, and crop?
 - Has yield potential been factored into the calculation?
-

2.

Split application timings

Claim:

“80 kg N/ha at GS25, 100 kg N/ha at GS30–31, and 40 kg N/ha at GS39.”

Risk:

Split timings affect tiller survival, grain number, and protein. Incorrect splits can reduce efficiency and yield.

Verify using:

- RB209 — Section 3 (cereals)
- AHDB agronomy hub — nitrogen timing guidance

Check:

- Do these splits align with current RB209 guidance?
 - Has the crop's tiller count and canopy been assessed to refine the first split?
-

3.

Claim that recommendation applies to all wheat varieties

Claim:

"...applies to all milling and feed wheat varieties."

Risk:

Milling and feed wheat have different nitrogen requirements and protein targets. A single rate does not apply universally.

Verify using:

- AHDB Recommended Lists (variety-specific guidance)
- Contract specifications for milling wheat protein requirements

Check:

- Does the variety have a different nitrogen response curve?
 - What protein specification is required — does this affect total N or the final split?
-

4.

Claim that no further soil testing is required

Claim:

"No further soil testing is required if you follow this programme."

Risk:

This is potentially dangerous advice. Sulphur, phosphate, potash, and pH status all affect nitrogen use efficiency.

Verify using:

- AHDB RB209 — sulphur, P, K, and Mg indices
- British Society of Soil Science
- ADAS

Check:

- Has sulphur status been checked — particularly on sandy soils prone to leaching?
 - Are P, K, and Mg indices at the correct level to support nitrogen uptake?
-

5.

SNS index interpretation

Claim:

“...with an SNS index of 1.”

Risk:

SNS index 1 covers a wide range of soil nitrogen supply. The actual recommendation within this band varies significantly.

Verify using:

- RB209 Table 3.2 — SNS calculation method
- AHDB SNS calculator

Check:

- Was the SNS index calculated correctly using previous crop, organic matter additions, and soil mineral nitrogen?
 - Is the calculated SNS at the upper or lower end of index 1?
-

Practical Verification Workflow

1. Read the full AI-generated response carefully (as quoted above).
2. Identify each nutrient recommendation as a separate claim.
3. Cross-check every figure against RB209 for the specific soil, crop, and index.
4. Obtain current soil analysis before finalising any programme.
5. Do not apply until the full recommendation is confirmed.

Verification Document 3

Variety Selection

Query:

I farm heavy clay soils in the East Midlands and want to grow winter wheat for the milling market. Which variety should I choose for next season, and what yield and disease resistance can I expect?

AI-generated response:

For heavy clay soils in the East Midlands, Skyfall is the top-recommended milling wheat variety. It delivers consistently high yields of around 10–11 t/ha on heavier soils and has a strong disease resistance profile, particularly against yellow rust and septoria. It is currently on the AHDB Recommended List with full milling approval and is widely grown across the region. Input costs are typically lower than other milling varieties due to its resistance package.

1.

Variety recommendation

Claim:

"Skyfall is the top-recommended milling wheat variety..."

Risk:

Variety rankings change each year as new entries are added and older varieties are removed or reclassified.

Verify using:

- AHDB Recommended Lists (current edition — updated annually)
- NABIM group classification list

Check:

- Is this variety still on the current AHDB Recommended List?
 - Is it classified in the correct NABIM group for the intended milling market?
-

2.

Yield claims

Claim:

"...consistently high yields of around 10–11 t/ha on heavier soils."

Risk:

Yield figures are regional averages from trial conditions. Farm-level yields depend on soil, management, season, and inputs.

Verify using:

- AHDB Recommended Lists — regional yield data (treated and untreated)
- Independent NIAB trials

Check:

- What does the AHDB Recommended List show for East Midlands treated yield?
 - How does this variety compare to other milling wheats in heavy land trials specifically?
-

3.

Disease resistance profile

Claim:

"...strong disease resistance... particularly against yellow rust and septoria."

Risk:

Disease resistance scores are updated annually. A previously resistant variety may have broken down — particularly for yellow rust.

Verify using:

- AHDB Recommended Lists — disease resistance scores (1–9 scale)
- AHDB disease management guides
- Fungicide Resistance Action Group (FRAG-UK)

Check:

- What are the current AHDB disease scores for septoria, yellow rust, and brown rust?
 - Has there been any reported resistance breakdown in recent seasons?
-

4.

Milling approval claim

Claim:

"...currently on the AHDB Recommended List with full milling approval."

Risk:

NABIM group status and buyer approval lists change. A variety may be listed but not accepted by a specific buyer or mill.

Verify using:

- NABIM wheat variety classification
- Grain buyer / mill contract specifications

Check:

- Is the variety in NABIM Group 1 or 2 for the current season?
 - Has the intended buyer confirmed acceptance of this variety in their current contract?
-

5.

Input cost claims

Claim:

"Input costs are typically lower... due to its resistance package."

Risk:

Input costs depend on local disease pressure, spray programmes, and market pricing — not just variety resistance.

Verify using:

- AHDB gross margin data
- Local BASIS-qualified agronomist assessment

Check:

- What is the typical fungicide programme required for this variety in your region?
 - Has an independent gross margin comparison been done against alternatives?
-

Practical Verification Workflow

1. Read the full AI-generated response carefully (as quoted above).
2. Check the current AHDB Recommended List before any seed is ordered.
3. Verify NABIM group status and confirm buyer acceptance independently.

4. Check disease scores against the most recent update — resistance can break down.
5. Do not commit to a variety until all claims are confirmed for the current season.

Verification Document 4

Growth Regulator Use

Query:

My winter wheat is at GS31 and I'm concerned about lodging. What growth regulator should I apply, at what rate, and can I mix it with my T1 fungicide?

AI-generated response:

At GS31, apply Chlormequat at 1.0 L/ha to reduce internode elongation and lodging risk. This can safely be mixed with most triazole fungicides at T1. A second application of trinexapac-ethyl at GS39 is recommended for additional stem stiffening. There are no temperature restrictions on Chlormequat applications in spring, and the product is approved for all UK-grown winter wheat varieties.

1.

Product and rate recommendation

Claim:

"...apply Chlormequat at 1.0 L/ha..."

Risk:

Chlormequat products vary in active ingredient concentration. Rate must be verified against the specific product label, not the active ingredient name alone.

Verify using:

- Product label (the legal document)
- Health and Safety Executive — CRD pesticide register

Check:

- Which specific Chlormequat product is intended — concentrations vary by formulation?
 - What is the approved rate on the label for this crop and growth stage?
-

2.

Tank mix compatibility claim

Claim:

"This can safely be mixed with most triazole fungicides at T1."

Risk:

Tank mix compatibility depends on specific products, formulations, water quality, and application conditions. 'Most' is not a safe basis for a decision.

Verify using:

- Product label tank mix guidance
- Manufacturer technical helpline
- AHDB fungicide performance data
- BASIS-qualified agronomist advice

Check:

- Is the specific fungicide product confirmed compatible with this Chlormequat product?
 - Has the addition of a third product (e.g. trace element or adjuvant) been considered for compatibility?
-

3.

Second growth regulator application

Claim:

"A second application of trinexapac-ethyl at GS39 is recommended..."

Risk:

Trinexapac-ethyl application timing, rate, and interaction with stress conditions must be assessed against the label and crop state — not applied as a blanket recommendation.

Verify using:

- Product label for the specific trinexapac-ethyl product
- AHDB growth regulator timing guidance

Check:

- What is the label-approved timing window for trinexapac-ethyl in winter wheat?
 - Are there any variety-specific sensitivities or restrictions?
-

4.

Temperature restriction claim

Claim:

"There are no temperature restrictions on Chlormequat applications in spring."

Risk:

This claim is potentially false. Many plant growth regulators have temperature and frost risk restrictions that affect crop safety.

Verify using:

- Product label — crop safety section
- AHDB spring agronomy guidance

Check:

- Does the label specify minimum or maximum temperatures for application?
 - Is there a frost forecast within 48 hours that could increase crop stress?
-

5.

Claim approved for all UK winter wheat varieties

Claim:

"...the product is approved for all UK-grown winter wheat varieties."

Risk:

Some growth regulators have variety-specific sensitivities or are excluded from use on certain types (e.g. waxy wheats, experimental lines). 'All varieties' is an unsafe generalisation.

Verify using:

- Product label — crop/variety restrictions
- AHDB Recommended Lists variety notes
- Variety-specific agronomy guidance from seed supplier

Check:

- Are there any listed variety restrictions or warnings on the product label?
 - Has the seed supplier or breeder issued any specific guidance for this variety?
-

Practical Verification Workflow

1. Read the full AI-generated response carefully (as quoted above).
2. Identify the specific product — not just the active ingredient — before checking any rate.

3. Read the product label in full, paying particular attention to crop safety, timing, and tank mix guidance.
4. Check the weather forecast and crop stress level before application.
5. Consult a BASIS-qualified agronomist if any doubt remains before applying.

The analysis in each document provides plausible explanations — not guaranteed truths. Good agronomy = data + verification + judgement.