

On-farm Field Evaluations to Support Production



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www.teagasc.ie/tillagecon25

Why Field Evaluations ?

- For a product or technique or system: Does it work? How does it work
- Apply it or Try it and compare with standard practice

Challenges

- Constraints on Fertilisers and Pesticides
- New alternative products to fill the void – relatively untested.

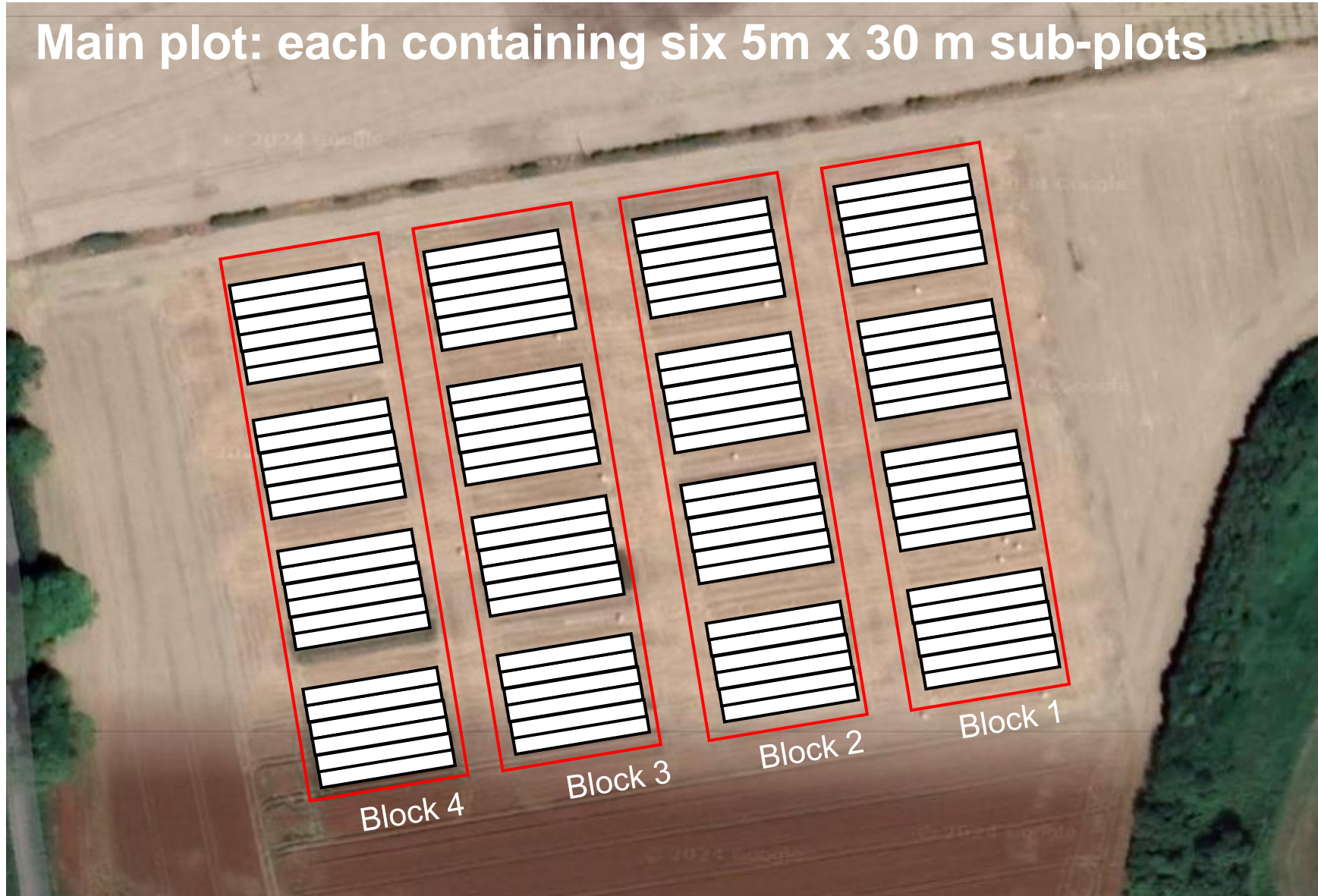
Do grower evaluations have a role?

- Types: Look/See; Validation; or Unique trial
- Methods: Single field; Split field; Tramline trial; Full trials; (+ New technologies)

Key Questions

- **What needs to be evaluated?**
- **What's needed to ensure results are reliable?**
- **Is it worthwhile - who should be doing this?**

What's involved in a typical field trial?



Example: Cultivations and Rotations Experiment - Knockbeg

- **Design:**
 - **Replication.**
 - **Randomisation**
 - **Blocking.**
- **To :**
 - **Deal with variability.**
 - **Detect real differences.**
- **Robust data collection and record keeping.**
- **Statistical analysis of treatments and their interactions.**

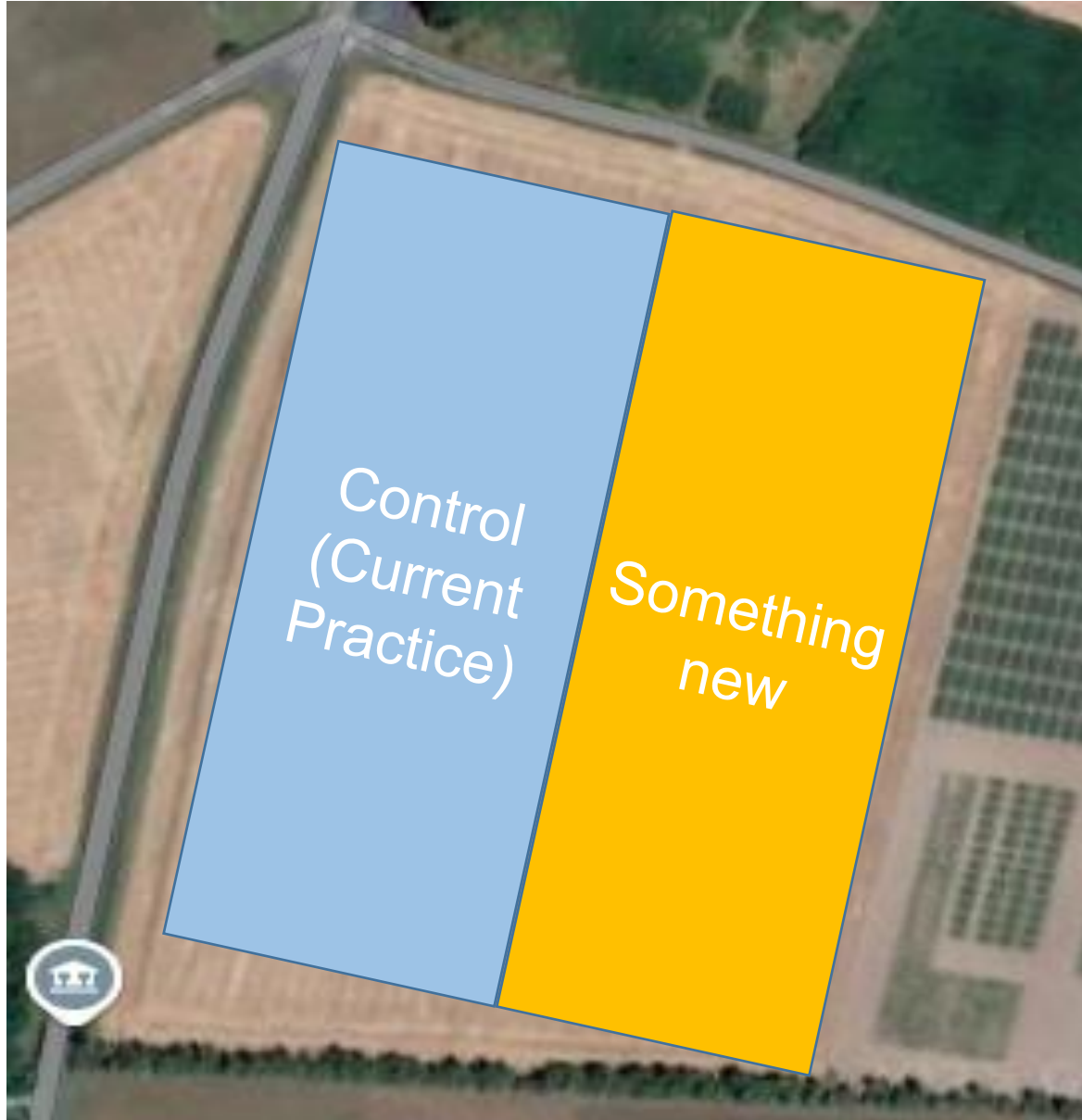
Examples of on-farm evaluations?

Example 1: Trying out a product on entire field



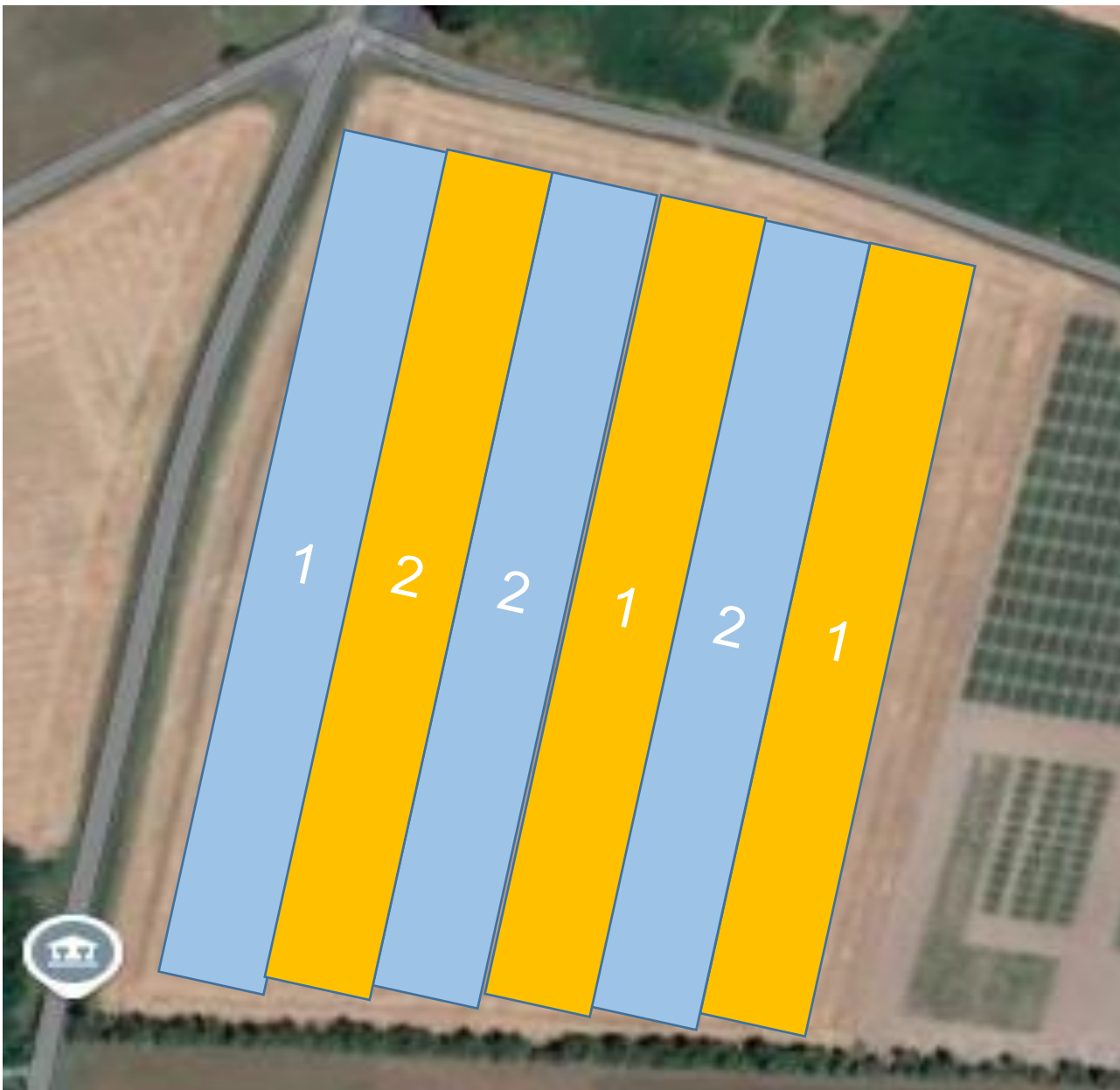
- **Benefits:**
 - **Easy to implement.**
- **Trade offs?**
 - **Cannot tell if treatment is providing a benefit over current practice or not.**

Example 2: Split field trial



- **Benefits:**
 - **Easy to implement.**
 - **Some insight gained.**
- **Trade offs?**
 - **Cannot tell if treatment is providing significant a benefit over current practice or not.**

Example 3: Tramline trial



- **Benefits:**
 - **Can tell if treatment is providing a benefit over current practice or not.**
- **Trade offs?**
 - **Requires more time and organisation to do than other methods.**

Example 4: Small plot trials



- **Benefits:**
 - **Can tell if treatment is providing a benefit over current practice with higher level of certainty**
- **Trade offs?**
 - **Expensive.**
 - **Time consuming.**
 - **Laborious**

Ways to maximise potential of on-farm evaluations

1. Field choice

- Uniform soil type
- Identify with yield map/satellite NDVI.
- Common cropping history.
- Soil test.

3. Randomisation

- Always a goal to remove cross field variation

2. Replication

- Treatment/product/practice tested
- Within a field
- Different fields
- Across years
- Tramline trials: single tramline for each replication of treatment.

4. Data collection

- Yield + moisture critical
- Record: management + observations.
- Other data: KPH, heads/m² etc. useful, weather, NDVI etc?

5. Data analysis

Plan carefully, keep it simple & talk to your advisor!

Avoid Pitfalls



Avoid un-representative areas:

- Headlands / trafficked areas/
- Awkward shaped fields.
- Different soil types.
- Poles/obstructions.
- Shaded areas/ Wet spots

Don't change plans during season

- Adding treatments.
- Changing treatments.

Record Management!!!

- Easy to forget details



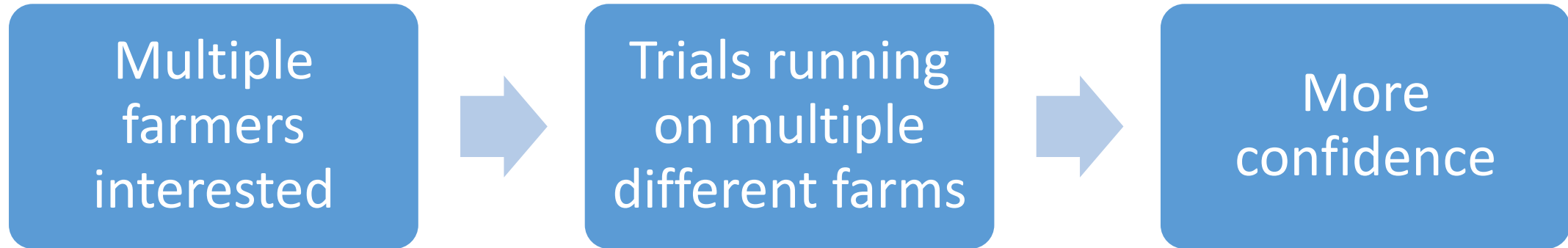
Is the difference due to the treatment?

Visual differences don't always mean a yield/quality difference

- Statistical analysis - tells us that differences are not down to chance.
- Weight of evidence increases with:
 - Number of replicates in trial.
 - Years of study.
 - Evaluation in various conditions: soils, weather etc.

Greater weight of evidence: more confidence in the result!!

How do we get more from these evaluations?

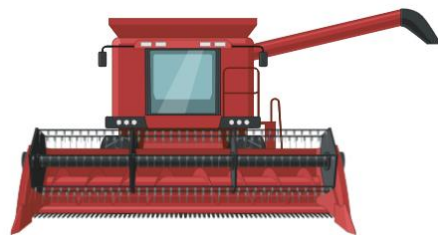


But:

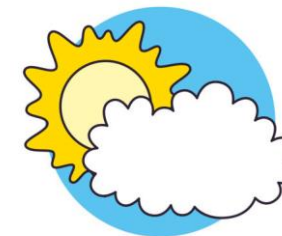
1. This takes time / resources.
2. Work needs to be carried out to a high standard:
to have evidence to give confidence in the results.



Section control on sprayers



Yield mapping on combines



On-farm weather stations



Variable rate fertiliser

Do new technologies have a role to play?



Smart phone apps



Variable rate seeding



Drone (multispectral imaging)



Satellite vegetative indices