



Wageningen University & Research

# Assisting Local Farmers in Complex Decision Making



Experts from Wageningen Plant Research help smallholder farmers to reduce the use of chemicals and optimize their crop – with easy-to-use, highly functional apps replacing complex Excel spreadsheets.



## Sound decision making for local farmers – with mobile access to complex data

Wageningen Plant Research advises specialists and farmers to achieve sustainable crops with lower use of chemicals. To spread and apply their findings in a better way, the Wageningen researchers skip the complex spreadsheet format. With Open as App, they turn bulky spreadsheets into user-friendly apps.

### Challenges: sharing and explaining research results to a remote audience

Wageningen Plant Research is affiliated with the renowned Wageningen University. It includes a small team of tropical agronomists who addresses sector professionals in Africa, Asia, and the Middle East. Their mission: to hold training courses on vegetable production and to implement projects based on specific requests. However, covering a huge area with a small team is not easy. Innovative solutions are required.

*“We use Open as App to create easy-to-use decision support tools for smallholder farmers in Africa, the Middle East, and Asia.”*

Ardjan Vermue, Applied researcher and capacity builder at Wageningen Plant Research



In online courses, new findings can be presented in a general way. In the field, where research is adapted specific answers are required. Experts and farmers need to take the individual conditions into account and combine them with the Wageningen data. With Excel sheets on mobile phones, this is not possible.

The tropical team plans to develop mobile apps to close the gap between theory and practice. Yet, having specific calculation apps coded for each project is too expensive, requires an intensive know-how transfer to the IT specialists, and is generally very time-consuming.

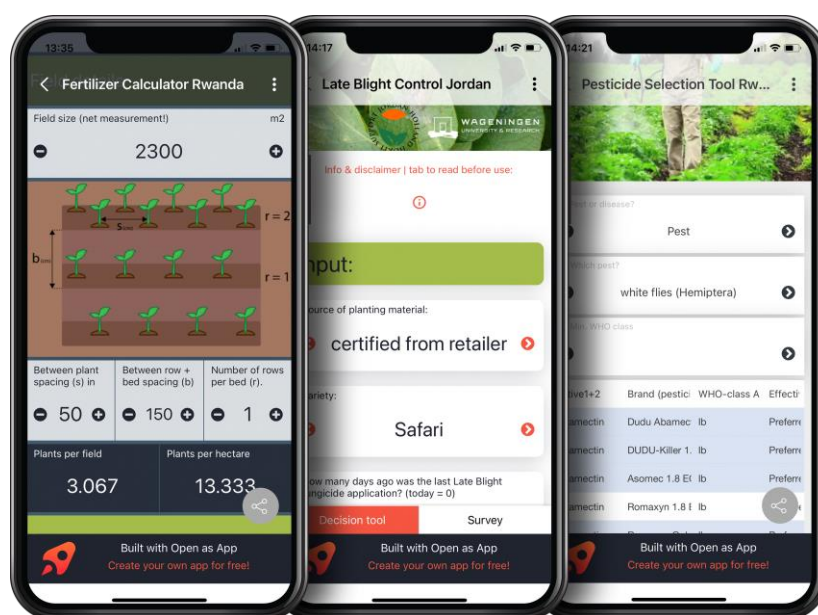




When researcher Ardjan Vermue and his team come across Open as App, they instantly start several pilot projects and turn complex research Excel spreadsheets into mobile and web apps.

## Solution: translating Excel data into interactive mobile applications

The Wageningen apps support the decision-making of either agricultural advisers or smallholder farmers directly. Ardjan and his team start with three agronomical apps – a late blight app, a fertilizer calculator, and a pesticide calculation app.



These apps cover typical situations in everyday farming disease control, fertilizer application, and pesticide selection. The tools are adjusted to the needs of a specific region or country, often embedded in more global research projects that are meant to adopt more economical and more sustainable farming practices.

### The first three agronomical apps of the Wageningen Research team:

- **Late Blight App:** The late blight causes an [estimated 10 billion Euro damage](#) in developing countries. To control it during the entire crop cycle the app provides checklists and spraying recommendations. In the pilot project, 30 potato farmers in Jordan use the app. In the next step, at least 500 farmers should be reached. The option to include data collection in the app is also in planning.
- **Fertilizer Calculator App:** Focus area for this pilot project is Rwanda. The app helps local experts to calculate the fertilizer needs based on crop, field size, soil, previously





applied fertilizers, and planned fertilizer mix. It includes the overall cost and cost per plant.

- **Pesticide Selection App** is designed for agronomists in Rwanda, helping to choose recommended pesticides and brand names selected by the identified pest or disease and with the possibility to filter by efficacy and by the level of hazardousness. The app can easily be adapted to pesticide lists in other countries.

Watch a [demo video on the Wageningen agronomist apps](#)' functionality and purpose.

*“Open as App brings our findings directly to the people who need them. We can create any app we need in almost no time. That’s perfect.”*

Herman de Putter, Trainer Vegetable Crops in Tropical Countries at Wageningen Plant Research

All three tools are currently applied for live testing during an entire crop cycle in three countries. Under survey is not the technology (that works fine), but the usability of the models and tools in practice. In the next step, the support tools will also be integrated into the general vegetable production training and distributed to a wide audience.



Fertilizer calculation app based on Excel research data





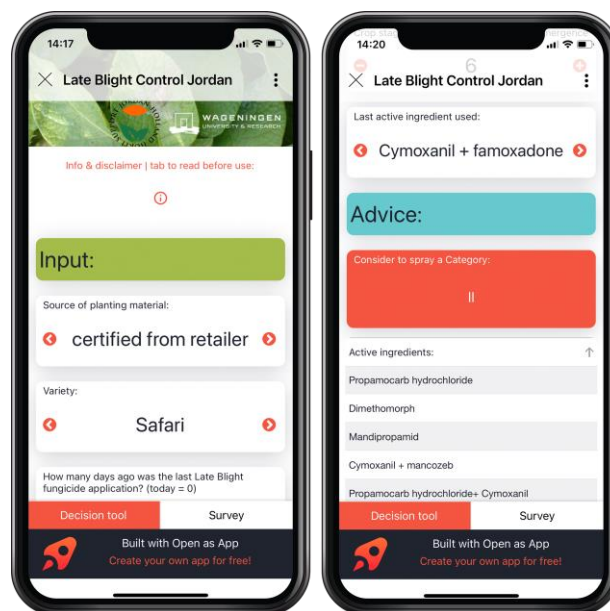
## Result: helping to implement sustainable farming practices

Many topics in agricultural decision-making are quite complex. Good training and education are essential to improve agricultural practices and to make them more sustainable and productive. With the pilot project apps, the Wageningen researchers this can be achieved much easier.

*“The first responses to our apps were far more enthusiastic than we could have imagined.”*

Ardjan Vermue, Applied researcher and capacity builder at Wageningen Plant Research

An app that, for example, helps farmers to apply the correct pesticides in the right amount at the right time, reduces costs for the farmer, and at the same time reduces the environmental impact of the use of pesticides.



Late Blight Control App based on Excel database

Depending on the complexity of a mobile tool, it can be used directly by farmers (like the late blight app) or is developed specifically for sector professionals with a more solid agronomy background. A fertilizer recommendation for example is quite complex and many agronomists struggle with them. The Wageningen tool adds accurate calculations based on the recommended application rates to the local knowledge about the choice of fertilizer types. And again, this helps to reduce costs for farmers and renders the production of vegetables more sustainable.





“As researchers, we know about the potential impact of our findings. Open as App helps us to apply it and put theory into practice in an easier way.”

William Bijker, Quantitative researcher sustainable agricultural and food systems at Wageningen Plant Research



Using apps to improve crops and increase sustainability

The Wageningen experts enjoy using the Open as App platform. Apps are easily created without coding and are instantly available. Based on their existing Excel files and sound Excel knowledge, it takes only a couple of days to implement a solution anywhere in the world. Apps are available online and offline which is a big advantage in remote areas. They are also GDPR compliant and can be used anonymously or with registration which is a requirement for EU-funded projects. Changes and adjustments during the pilot phases are made incredibly fast. And the costs are low compared to individual coding.

### The advantages of Open as App for Wageningen Plant Research:

1. Short time from idea to app
2. GDPR compliant
3. Offline available
4. Easy to use on mobile phones
5. Fast know-how transfer without background knowledge on complex data
6. Easily implemented and updated
7. Low cost compared to coding projects

To the research team, however, there is another huge benefit. As a mobile app, research results are much more easily adapted by users in the field. And that's what their research is all about after all.





## WAGENINGEN UNIVERSITY & RESEARCH

The Research Institutes of Wageningen University & Research carry out application-oriented and field-based research. They are commissioned by the government, commercial businesses, and non-profit organizations. On a research project, there is often a collaboration between several institutes. Collaboration is often also sought with the university and/or national or international partners. [More](#)



## OPEN AS APP

Open as App is a #nocode platform empowering everyone to create and share apps automatically, including logic, charts, and calculations.

We enable individuals and companies of all sizes to

- save time and budget
- protect their know-how
- secure and manage the way data are shared
- provide great customer experience/ innovation
- increase their resources for digitization with citizen developers

And the best, Open as App, is free to try.

