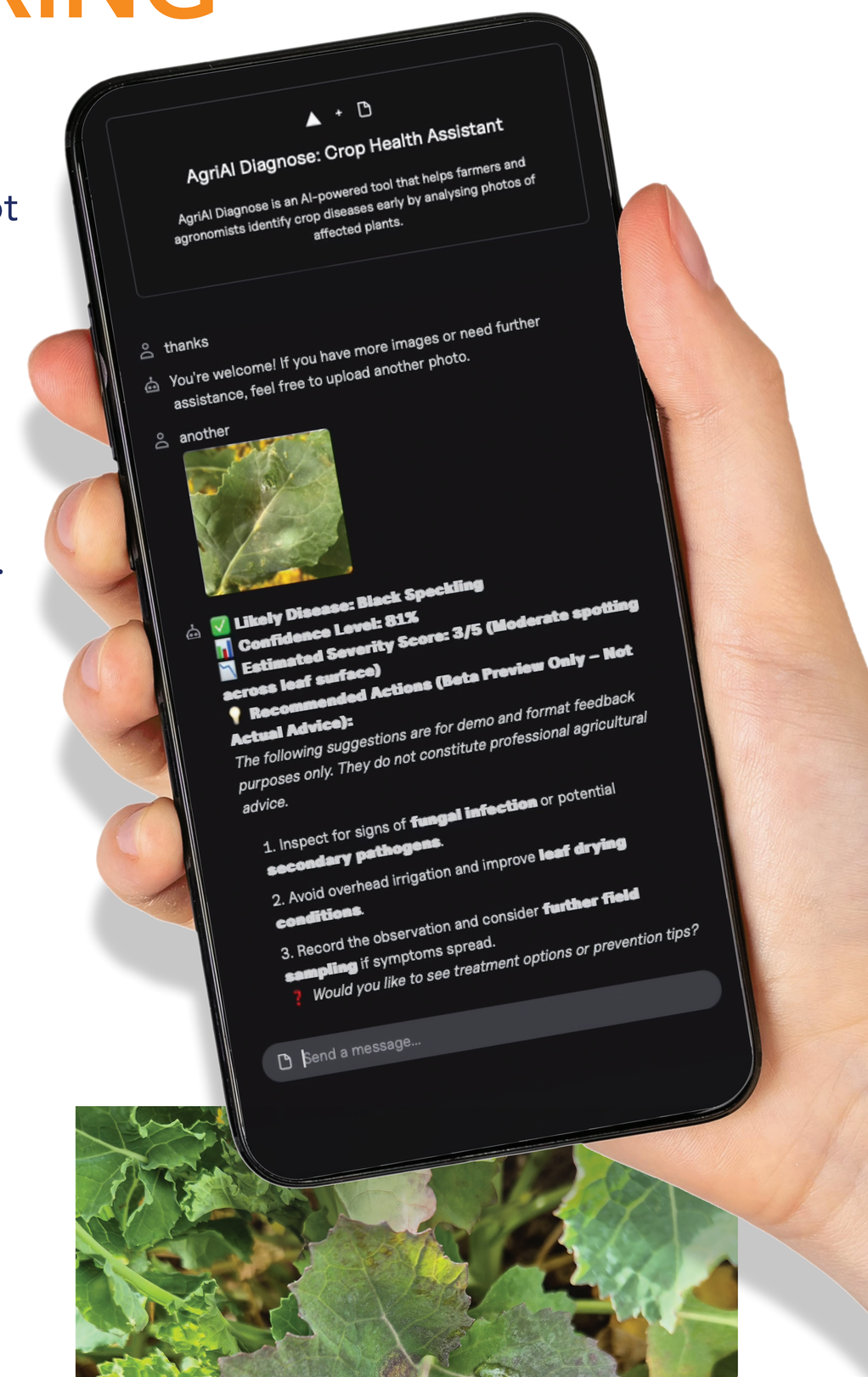
NIAB Plant Science into Practice

DIAGNOSING AND SCORING CROP DISEASE USING AI

Niab is developing an easy-to-use, cost-effective, proof of concept mobile imaging application using artificial intelligence (AI) for accurately diagnosing early-onset foliar disease symptoms in wheat and oilseed rape.

This will help to support disease management decisions for growers and agronomists. The application is also being optimised to distinguish between disease severity levels to support variety rating assessments for supporting plant breeders and researchers.



Niab's research is:

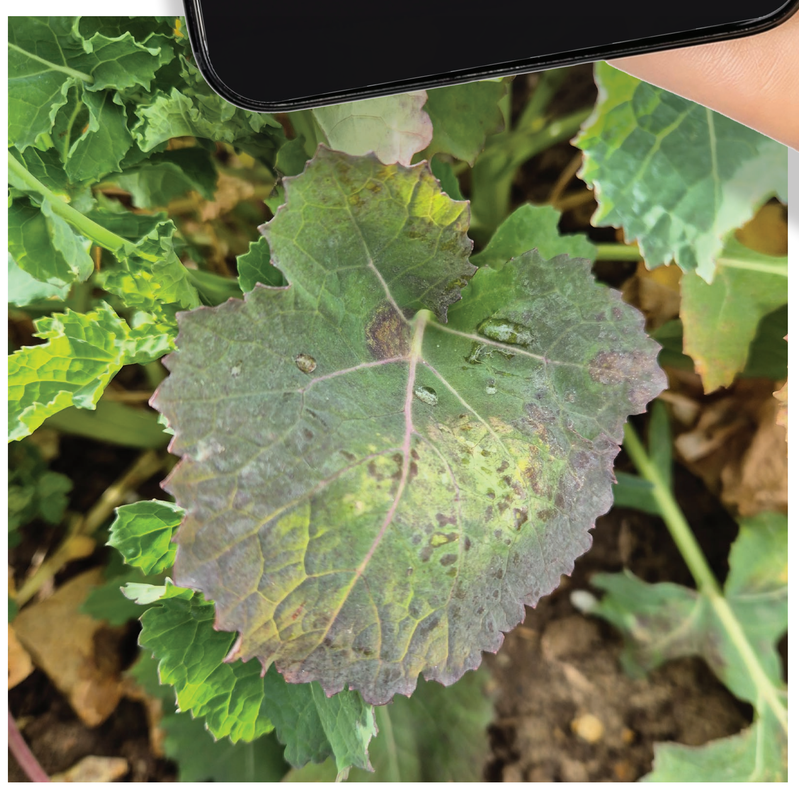
- capturing extensive image sets of *Septoria* and yellow rust on wheat, light leaf spot on OSR, and disease-free crops;
- assigning descriptive labels of disease symptoms by experts;
- training AI models using the labelled images of varying quality/ resolution to teach the mobile visualisation platform (MVP) to accurately detect the target diseases;
- testing and optimising use of the MVP app in the field;
- re-training AI models using additional crop data to improve accuracy.

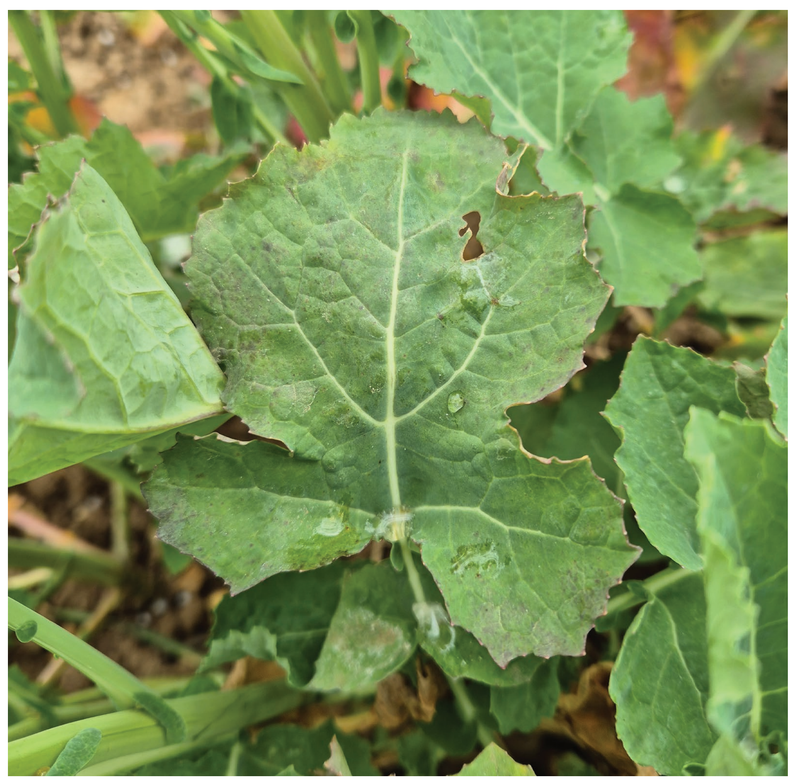
The technology step by step

- The user takes an image of the suspected infected leaf.
- The AI-powered MVP app processes the image, providing the user with a diagnosis, and an accuracy probability (and depending on the level of service selected, guidance on which management practices are appropriate).
- The MVP app is trained across the entire phase of disease development, enabling even early stages symptoms to be identified accurately.
- The MVP utilises newly captured images to re-train the AI-models, continually improving accuracy.
- The MVP will be released to end-users as Software as a Service (SaaS).

The AI support tool app will:

- provide rapid, cost-effective diagnosis of prevalent diseases in wheat and OSR;
- enable growers to make timely decisions on disease management options, helping to reduce inputs and improve sustainability;
- increase efficiency in variety assessment trials, facilitating greater throughput for breeders and researchers;
- support the development of AI-based diagnostic approaches for other crops/diseases.





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Industry partner: Creative Innovation Technologies

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