



# A guide: how to use the CottonInfo NymphCheck App

The CottonInfo NymphCheck App is a digital tool to assist with sampling for silverleaf whitefly nymphs by providing image-derived insect counts using a phone camera. As at late January 2024, NymphCheck will be available to interested users as a pre-commercial release Beta version.

The software is based on research and development undertaken with support from CRDC by Dr Derek Long and Dr Alison McCarthy from the University of Southern Queensland (USQ) Centre for Agricultural Engineering in partnership with QLD DAF and CottonInfo IPM Technical Lead Dr Paul Grundy.

## This guide is going to cover:

- The lens that you need to use the app
- How to hold the leaf to take photos
- What the result numbers mean

## Lens attachment



You need an Apexel 200x Microscope lens. It has a built-in light which can be charge via an included USB-C cable, and will fit over all iPhone and most Android cameras. Your phone case may need to be removed in order to fit the lens.

You must use the specified lens with the app. The classifier was developed specifically for high quality images that come from this lens, and so using any other lens will give lower quality images and will not be compatible with the app.

You can use these links to purchase the lens. If you are having difficulty locating one to purchase, reach out to Derek at [derek.long@usq.edu.au](mailto:derek.long@usq.edu.au).

- [Ebay link 1](#)
- [Ebay link 2](#)
- [Ebay link 3](#)
- [Ted's Cameras](#)

Note: There are variants of this lens with and without a polarising filter (CPL). We strongly recommend getting one with the CPL – double check the purchase link to make sure it has it (all the links above should be OK).

## How to take photos

Taking a photo with the lens on is straightforward. After turning on the lens light we can press the leaf up against the lens and that puts the surface of the leaf in good focus. Try to put the nymph/s towards the centre of the photo, and in focus.



## Interpreting results

There are two numbers that are returned when an image is processed by the app:

- Viable whitefly (appearing healthy)
- Non-viable whitefly (showing parasitism or dead)

If you get a number of results back less than the number of nymphs in the image, that means that the classifier wasn't confident enough in its assessment to report the result. Blurry areas of the photo are ignored (below of the vein of the example image above, for example). You can slightly reposition such that the whole image is in focus and try again, or alternatively move on to another nymph.

## FAQ

### **Does the app work outside of mobile reception?**

Yes. The processing occurs on your phone, so there is no uploading of your photos anywhere. In this build of the app, we don't take any data from your device for any purpose – it is entirely an offline app.

### **Is this app going to use up lots of my phone storage?**

The only photos that the app will keep on your phone storage are those in your currently saved 'group capture' session. If you reset the session by starting a new one, then the photos will be gone for good. Any photos captured through the app camera kept only in the app, and not also placed into your phone library.

### **How accurate is it?**

Our internal testing indicated that the classifier is 80-85% accurate. We've done our best to make this consistent across all growing regions and phone types, but we can't guarantee this accuracy in all cases because of environmental variations.

### **What lenses are compatible with the app?**

Only the Apixel 200x lens that is linked in the user guide will work with this app. Using any other lens will make the classifier produce random results.

### **What has happened to the nymph counting functionality from the original PestDetect app?**

We are looking at a thorough redesign of both the nymph counting function and the decision support tool that it links to and will have more to say in the future. We've focused on the lens mode for this 'Lite' app release because that is what hit the mark in the original app.