

Installing macro and plugin

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Installing contact_angle_prep.ijm

- Click on “Plugins” > “Macros” > “Install...”
- Using your file explorer, navigate to the “Scripts” folder of the GitHub repository and select **contact_angle_prep.ijm**
- To run the plugin, go to “Plugins” > “contact_angle_prep”.
- You can press control Z if the boundaries of the water drop are not clear.

Installing Contact Angle plugin

- Download **Contact_Angle.jar** from <https://imagej.net/ij/plugins/contact-angle.html>
- Click on “Plugins” > “Install...”
- Using your file explorer, navigate to where you saved **Contact_Angle.jar** and select the file.
- To start the plugin, click on “Plugins” > “Contact Angle”.
- How to use
 - Manipulating points
 - The pen with + symbol adds new points.
 - The pen with the arrow symbol lets you move points.
 - The pen with the - symbol removes points.
 - The note icon pulls up the menu.
 - The microscope with the arrow stops the plugin.
 - The magnifying glass lets you zoom in.

Measuring contact angle

1. Open the file in Image J and assess the quality.

A high-quality image (3) will have well-defined droplet edges, and the interface between the droplet and the leaf surface will be easy to see. The droplet will also be in profile and symmetrical. A medium-quality image (2) will not meet these criteria, but the contact angle can still be estimated. A low-quality image (1) is unreliable.

2. Run contact_angle_prep macro.

This flips the image and makes the droplet boundary less ambiguous.

3. Zoom in on the droplet so it takes up most of your screen.

4. Use the Contact Angle plugin to mark the water drop boundary.

- a. Mark where the water meets the leaf on one side.
- b. Mark where the water meets the leaf on the other side.
- c. Mark the highest point of the water droplet.

- d. **Mark two other points, roughly equidistant from the water-leaf interfaces and the highest point of the water droplet.**
5. **Choose an elliptical fit from the menu.**
6. **Record the angle in Google Sheets.**
7. **Close the Contact Angle plugin before opening a new image**
If you don't, the Contact Angle plugin might stop working, and you will need to restart ImageJ.