Leaf clearings

Use ethanol and sodium hydroxide to empty the cell contents of the leaf as much as possible.

1.) Place plant tissue in 80% ethanol for several days (or maybe in low heat oven 30-35C overnight).
2.) Rehydrate slowly to water (30 minutes per change using approximate steps of 70% - 50% - 25% ethanol, and then water).
3.) Prepare an aqueous solution of 10% NaOH (weight by volume) and put the tissue in the solution over night (10-14 hours) in an oven. A temperature of 60C is recommended, although it can be too harsh. Trial and error. Make sure the solution will not evaporate off excessively overnight in the oven! Everything is lost if it dries out.
4.) Wash out the NaOH with several changes of water. Material can be viewed by mounting on a slide under a cover slip, in water. Material can be stored for longer intervals by dehydrating through steps of 25% - 50% ethanol, and it can always be pushed into xylene later if that is important. Generally, that is the best clearing. However, some tissues will always be recalcitrant and may never clear well.

Note that some materials will be very delicate after this treatment, so it will need to be handled carefully. Tissues viewed on a slide need not be discarded, it can be returned to the sample vial and saved for future use.

Fuchs, C. 1963. Fuchsin staining with NaOH clearing for lignified elements of whole plants or plant organs. Stain Technology 38: 141-144.