KANSAS STATE UNIVERSITY | Extension
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**Can Your Phone Identify Plants for You?**

With thousands of different plants growing in our state, determining what you are looking at can be difficult. While field guides used to be the principal method of plant identification for beginners and experts alike, smartphones are shifting the way we approach the mystery plant in our backyard. Certain phone applications promise to instantly identify a plant using only a picture. The idea of snapping a picture and getting an instant identification has its appeal – but are they accurate, how do you use them effectively, and how can you tell when it is wrong?

The accuracy of these applications depends on the type of plant, what you include in the picture, and your standard for accuracy. Michigan State Extension found that apps were less accurate when identifying plants with subtle differences like grasses. A study at Rutgers University found these applications are better at identifying tree leaves rather than just the bark. Both studies consistently found the applications were good at determining the genus but are far less accurate at pinning down the species. Do not be surprised if your plant identification app thinks your Black Willow is a Red Willow.

Looking at the accuracy of some popular plant ID applications like iNaturalist, PictureThis, and PlantNet (all available on IOS and Android), we also see that these apps are not created equal. In recent studies, PictureThis consistently shows a 95% or above accuracy to the genus, while iNaturalist had around 90% accuracy to the genus. PlantNet and Plant ID trail behind in the 80% accuracy range. These numbers, however, are not static. Earlier studies on these applications show unremarkable accuracy, and our changing technology is continuing to improve their plant recognition abilities.

While recent studies show impressive accuracy, user error can lead to incorrect results. Blurry pictures or pictures with multiple plants confuse the application. A close-up only showing part of a leaf, or a picture taken from far away will not provide the application with enough detail. After you submit a good picture, it will generate a few possible identities, along with descriptions and example pictures. Examine the pictures and description to ensure it matches the plant you are looking at. Your phone only uses visuals for identification, and some plants have specific textures or odors that distinguish them. While many apps use your location to narrow results, use the description to see if the suggested identification grows in your region and the habitat you are in. If it suggests a shade-loving plant while you are in an open field, you have good reason to doubt the results.

What does all this mean? It means these applications are useful in particular instances. Never use these apps to determine what plant your pet ate before it fell ill or to find edible plants for foraging. Instead, consider these applications as one tool in your plant identification toolkit. They can help you determine weeds you might have in your garden, or what kind of flowers you are seeing while hiking. Reading plant descriptions on these apps can help you learn plant terminology and morphology, point you to what chapter in your field guide to turn to, or give you info to start a search on databases like USDA PLANTS. Some apps show what other users nearby are identifying, and help you learn more about the flora in your region. For the average plant enthusiast, these applications can be incredibly useful and, when paired with other tools, can show you the incredible diversity of life in your own backyard.

*Note: K-State is neither endorsing nor expressing bias against any of the applications mentioned.*