

Outdoor — Sunflower family used for rubber, insecticide



By David Lutz

It is interesting that the largest and most diverse family of plants in Arizona also is one of the easiest to distinguish as a family. I refer to the Compositae, commonly known as the sunflower family, though many plants do not obviously resemble sunflowers at all. Within the family are about 165 genera and 600 species ranging from insignificant herbs to large shrubs.

The leaves are simple, having only one blade for each stalk branching from the main stem, but the blades may be deeply cut appearing compound, and can be of almost any arrangement and shape.

The flowers too exhibit a wide range of variability. They can be any color of the rainbow and have a variety of sizes and shapes. You may wonder, how then can they be distinguished from other families?

The most important characteristic is that the flowers, and therefore the fruits also, are borne in a composite head on a receptacle; thus the name Compositae. The cultivated sunflower from which the commercial seeds are obtained is a good visual example of the structure. While not all the heads have that many individual flowers, very rarely is there only one flower

per head leading to confusion with other families.

Another characteristic are the bracts, called phyllaries, which surround the receptacle. The bracts are also variable, ranging from green and leaf-like to thin, dry, and scale-like. Though an outer ring of ray flowers (those with a large outward radiating petal) is a good indication of the plant belonging to the sunflower family, many Compositae do not have ray flowers.

The petals of each flower are joined together and connected at their bases at the top of the seed producing structure, the ovary. Often the style which grows from the top of the ovary has two divergent branches and projects above the petals. There are usually five stamens connected by the anthers and encircling the style, but often this is not easy to observe. The fruits are termed achenes. If you imagine the sunflower seeds available at stores, the hard

outershell is the pericarp, the wall of the ovary, and the inner part you eat is the actual seed. Often the whole fruit is small and hard but if it is carefully cut in half, you will notice the same basic structure.

Many achenes also have a structure at the top called a pappus. This can be a single, thick, bristle-like organ, a series of bristles either hair-like or feather-like, or one or more scales. The dandelion puff-ball is a good example of how the pappus functions to distribute the seed. All it requires is a bit of wind or a child and a puff of air. Locally, the pappus of desert broom produces our "desert snow."

In contrast to the relative ease of determining if a plant is a member of the sunflower family, keying a Composite to its genus or species is quite difficult and frequently requires a microscope. Interestingly, the same can be said of the grass family. Arizona's second largest. Together, these two families account for more than one-fourth of

all species of flowering plants in our state.

Some well known commercial plants in the sunflower family are lettuce (*Lactuca sativa*), artichoke (*Cynara scolymus*), Jerusalem artichoke (*Helianthus tuberosus*), endive (*Cichorium endivia*), salsify (*Tragopogon porrifolius*), and sunflower seeds (*Helianthus annuus*). Dandelion greens (*Taraxacum spp.*) are edible and T. officinale is common in Arizona. Chicory leaves (*Chicorium intybus*) are also used as food and the roots may be used as a coffee substitute.

Yarrow (*Achillea lanulosa*) is used medicinally and the eastern species, *A. millefolium*, can be found in herb stores. Gum-weed (*Grindelia spp.*) is listed as an official drug plant. The powdered

flowers of a plant known as pyrethrum (*Chrysanthemum sp.*) is commercially used as an insecticide.

Another useful plant is guayule (*Parthenium argentatum*), grown for its resins which can be processed into a high quality rubber. While other members of the sunflower family also contain these resins, guayule gives the best yield and has other properties that make it suitable for commercial growing. Mexico has used the plant for many years but this country is developing its first farm and processing plant near Sacaton, Arizona.

Next time you're admiring the beauty of one of Arizona's sunflowers, spend a moment to take a close look at the structural characteristics of the Compositae family.