

AMARANTHACEAE (Amaranth Family)

Plants annual or perennial herbs (sometimes woody elsewhere), often monoecious or dioecious, not or only slightly succulent, often with a taproot, glabrous or hairy, often tinged with pink to purple pigmentation. Stems spreading to erect. Leaves alternate or opposite, simple, the margins entire or sometimes somewhat wavy (occasionally minutely sharply toothed in Iresine). Stipules absent (paired stipule-like axillary spines present in Amaranthus spinosus). Inflorescences axillary and/or terminal; dense spikes, spike-like racemes, or panicles, sometimes reduced to small, axillary clusters (globose heads or solitary flowers elsewhere), the main axis occasionally broadened and flattened (fasciated) with flowers across the surface. Flowers sessile or very short-stalked, with 1–3 small, papery to scale-like or hardened (sometimes appearing spine-tipped) bracts (1 bract and usually 2 additional bracteoles), imperfect or perfect, hypogynous. Calyx absent or more commonly of (2–)4 or 5 sepals, these free or fused either most of their length or only at the base, green and often somewhat hardened (sometimes appearing spine-tipped) or white, yellow, pink, red, or purple and papery, persistent at fruiting. Petals absent. Stamens (1–)4 or 5, absent or reduced to minute staminodes in pistillate flowers, the filaments sometimes fused, at least toward the base, the anthers attached toward their midpoints, usually yellow. Pistil 1 per flower (absent in staminate flowers), the ovary superior, consisting of 2 or 3 fused carpels, with 1 locule, the placentation usually basal. Style absent or 1, often very short, the stigmas 1–3, slender or capitate, occasionally lobed. Ovules 1 (several in Celosia). Fruits mostly capsules (occasionally indehiscent and achenelike), not winged at the tip, sometimes beaked, indehiscent or more commonly with irregular or circumscissile dehiscence. Seeds 1 (2–6 in Celosia), minute, often somewhat flattened, circular in outline or nearly so (the embryo appearing curved or coiled but not always easily observed). Sixty-five to 69 genera, 900–1,000 species, nearly worldwide, but most diverse in tropical and subtropical regions.

The Amaranthaceae are here treated in the traditional sense as a family separate from the Chenopodiaceae. However, a number of morphological and molecular phylogenetic studies (Rodman, 1990, 1993; Manhart and Rettig, 1994; Downie et al., 1997; see also Judd et al., 2002) have presented evidence to suggest that the Chenopodiaceae as thus circumscribed are paraphyletic; that is, that the genera of Amaranthaceae represent a specialized subgroup within the lineage of Chenopodiaceae rather than a separate sister clade. Because some of the conclusions of these papers are contradictory and a few relationships among genera are yet controversial (such as the placement of Spinacia L.), it seems premature to combine these families in a floristic treatment until more detailed studies can be completed. The morphological features that generally separate the Amaranthaceae from Chenopodiaceae include their stamens with the filaments fused basally (vs. free) and papery (vs. herbaceous) perianth and bracts, but numerous exceptions exist. Members of the Amaranthaceae are nearly all wind-pollinated. Pollen grains of most Amaranthaceae and Chenopodiaceae are virtually indistinguishable morphologically, and the two families are usually lumped into a single pollen class in projects that monitor airborne spores and pollen for air quality and hay fever reports. In addition to members of the genera included below, some species of Gomphrena L., globe amaranth, are cultivated in gardens for their ornamental foliage and inflorescences.

In the keys and descriptions below, measurements of bract length refer to the bract, which often is larger and more conspicuous than the two bracteoles that usually are also present, although sometimes the three structures are essentially indistinguishable.