

# Diversity Survey Of Succulent Ornamental From Amravati Region

P. N. Pawade

*Department of Botany, Arts, Commerce & Science College, Kiran Nagar, Amravati*

## Abstract

*The present study deals with the diversity of ornamental succulent from Amravati District of West Vidarbha region of Maharashtra. All these ornamental succulent show diversity in their habitat, floral structure, flowering period, etc. In the present investigation, extensive field surveys were conducted in the different localities of Amravati district during 2005-2011 containing description, distribution, origin, vegetative & flowering period of 18 ornamental succulent species from 6 families with their photographs.*

**Key words:** *Diversity, Ornamental succulent and Amravati city*

## Introduction

Amravati is one of the district of West Vidarbha regions of Maharashtra, forms a part of Deccan Plateau. It lies between  $20^{\circ}$ - $32^{\circ}$  to  $21^{\circ}$ - $46^{\circ}$  North latitude and  $76^{\circ}$ - $37^{\circ}$  to  $78^{\circ}$ - $27^{\circ}$  East latitudes. The total area of Amravati district region is 12,210 sq. km. The Wardha River forms the entire eastern boundary of the district which comprises major hilly regions like Melghat (Satpuda). The total area under forest is 51,493,248 hectares, of which 55,790 hectares is unclassified & very little area of this region is utilized for cultivation of ornamental plant. Ornamental succulent are a staple in landscapes as they are used for the purpose of beautification & adding interest with their succulent foliage, stem or flowers. This region has a rich diversity of succulent species with over more than 15 different succulent varieties growing across the Amravati district. All these succulent are grown as pot herbs while some are often grown as succulent shrubs. Most of these ornamental succulent are exotics and planted house garden, botanical gardens, industrial area & in public gardens. These native & exotic succulent are well adapted to the climatic conditions.

Succulents are now seen in everything from boutonnieres to hanging planters. They are a trend that is taking over not just gardens, but wedding and home decor as well. Succulents are a type of plant that thrives in dry climates. Most succulents come from areas in Africa or Central America where it is hot and there is little humidity. Because they store water in their leaves, they can withstand long hours in the sun and little watering. These plants are great for adding structure and vibrance to gardens and homes. There are many types of succulents that can be used as corner plants in a home office or pops of color in a lush garden.

Gardening has been popular in India from ancient times. In ancient Indian literature, the cultivation of food & medicinal plants was known since 4000 years. In the ancient Mediterranean civilization, gardens were prominent features of the grounds of temples & Palaces. Among the several kinds of flower grown in the garden. Only a few are natives of India, these are cultivated as an ornamentals.

These nurseries brought the ornamental plants of various categories from Banglore, Culcutta, Pune etc. & planted in garden. One of the forest nursery is located at Chikhaldara & Semadoh. These private nurseries planted the various ornamentals like shade trees, shrub, annual & perennial herbs, climbers, Bulb, tuberous, foliage plants, hydrophytes, even some fruit yielding plants etc.

## Materials and Method:

In the present study, the plant specimens were collected during 2005-2011, by extensive field visit of various like Botanical Gardens of University Campus, Forest, Public Parks, Municipal corporation gardens & roadside from Amravati city. To obtain complete specimen i.e., flowering & fruiting stage, fragments & seasonal visits have been made to the garden. Field data has been noted in the field diary. A separate note on gardening is also given which includes the propagation methods & medicinal uses.

The collected plants were studied, described in details, in field diary & identified & classified up to the varieties & sub varieties level by using standard floras.

### Result & Discussion:-

The present study has revealed that, about 302 genera & 433 species belonging 97 families are listed, identified, classified upto varieties level. Out of these 433 species, we have identified & studied 18 species of ornamental succulent with their origin, vegetative & floral characters, flowering period etc. In all almost ornamentals shows tremendous seasonal variations. This is due to change in climatic condition in our temperate dry region. As most of the succulent are planted home gardens, public garden, and industrial areas.

All these collected ornamental succulent shows diversity in their habitat, floral structure, flowering period, etc. So, this paper describes 18 ornamental succulent species belonging to 6 families with their distribution, origin, vegetative, floral structure & flowering period.

### LILIACEAE

**Aloe vera** Limm. Sp. Pl. 320. 1753; Burm. f. Fl. Ind. 83. 1768; Gandhi in sald. et. Nicolson, Fl. Hassan dist. 793. 1976; Naik, Fl. Osamanabad 334. 1979. *Aloe perfoliata* L. var. *vera* L. Sp. Pl. Pl. 323. 1753. *A. brabadensis* Mill. Gard. Dict. n. 2, 1768; Cooke, Fl. Pres. Bombay 2 : 774. 1905; Naik, Fl. Marathwada 2 : 858. 1998.

A succulent herb, Leaves fleshy, ensiform, dense, aggregate, narrowed from the base to apex, sheathing at base, horny prickles along the margins, glaucous green, plane on the upper surface, convex beneath; scapes 1-3, terminal raceme, simple or branched, racemes 15-40 cm long, bracts ovate, pedicels long. Flowers orange-red or yellowish. Perianth orange-red, erect, stamens exerted. Capsules ovoid-ellipsoid, brown, obtusely trigonous. Seeds many, black.

Native of North America. Grown in kitchen gardens. Fls. & Frts. :- September to January

Uses : Leaves are used in medicine.

### AGAVACEAE

**Agave americana** L. var. **marginata** Trel.; Bailey, Man. Cult. Pl. 239. 1949; Naik, Fl. Marathwada 2:846. 1998. "Kektad, Century plant."

Stem short, perennial, succulent herbs, stem covered by the thick leaf bases, heights of 7 feet with a 13-foot spread. Leaves form the rosette, long, linear-lanceolate to oblong - lanceolate, contracted just above the base into a collar; marginal spines recurved; apical spine sharp, long, leaves 3-5 feet long, wide, yellow margin and green strips in the centre. Leaves thick, spiny with contrasting pale and dark green markings. Flowers densely crowded in large panicles at the end of stout, 4-6 m tall scapes, bracts lanceolate. Perianth with an evil smell, funnel shaped, segment oblong, yellowish green. Seeds not found.

Planted in gardens. native to the Americas. Flowers & Fruitts : January to March.

**Sansevieria trifasciata** Prain, ver. laurentil, N. E. Br., Bailey, Man. Cult. Pl. 169. 1924; Bose, Chowdhury and Sharma, Trop. Gard. Pl. 293. 1991. **Snake plant.**

Perennial, succulent herbs, with short thick rhizome, about 4 – 5 feet tall. Leaves with compact stiff rosette, erect, linear – oblong, entire, narrowed at the apex into acute point, green with gray, wavy cross bars, leaves longitudinally striped golden-yellow margin, sessile. Flowers on 30 – 60 cm tall scapes. Perianth white; segments oblong-linear, obtuse. Stamens 6, as long as the perianth, attached on the throat, anther versatile. Ovary minute, tree, 3 – celled with single ovule.

Native of Belgian Congo. Grown as pot herb or in borders. Flowers : May to September.

### CRASSULACEAE

**Crassula perfoliata** Bose, Chowdhury and Sharma, Trop. Gard. Pl. 395. 1991.

Perennial, succulent herb. Stem erect, fleshy. Leaves in 4 rows, lanceolate, tapering towards the apex, straight, not falcate, deep grayish green, thick, bright green leaves edged in red covered with silvery roughness, upper surface hollow. Flowers not seen.

Native of from South Africa . Grown in gardens due to its decorsative leaves.

**Crassula ovata** (Jade plant) is the most common variety of crassula available, found at most plant nurseries.

**Echevera peacockii** Bose, Chowdhury and Sharma, Trop. Gard. Pl. 401. 1991.

Succulent, stemless herb, short-stemmed with age. Leaves in dense rosette, thick, nearly obovate, usually obtuse, upper surface flat, lower convex, suddenly tapering, margin entire, tip reddish. Flowers not seen. Native of Mexico, Central America, South America. Grown in gardens due to its decorative leaves. Propagation by stem and leaf cutting also by seed.

**Echeveria pulvinata** Bose, Chowdhury and Sharma, Trop. Gard. Pl. 416. 1991. "**Plush Plant**"

Succulent herbs, covered in fine white hairs that shimmer in the sun, giving it a silvery appearance. and blooms gorgeous orange-yellow blooms that mirror a sunset. They prefer partial shade and can be grown in the ground or placed in containers within a garden. It is a native to Southern Mexico.

**Kalanchoe beharensis** Bose, Chowdhury and Sharma, Trop. Gard. Pl.416.1991. "**Elephant ears**".

Perennial, succulent herbs, up to 4-6 feet tall. Stem thick, glabrous, woody towards apex, leaf scars prominent. Leaves simple, opposite-decassate, triangular-lanceolate, 10-12 cm long, thick, upper surface concave, lower convex, olive green, dense brown hairs on both surfaces; margin wavy, shortly acute. Flowers not seen. Grown in gardens. Propagated by stem and leaf cutting as well as by leaf bud.

**Kalanchoe blossfeldiana** cv. Bailey, Man. Cult. Pl. 466.1949; Naik, Fl. Marathwada 1:364.1998; Das Das et. al., Fl. Maharashtra Sts. Dicot. 1:842. 2000.

Glabrous, succulent, perennial herbs, 30-60 cm tall. Leaves oblong-spathulate or oblong-obovate, entire, green with red marginal line, obtuse. Flowers scarlet, in dense terminal corymbose panicles; pedicel short. Calyx membranous, lobe ovate, acute. Petals 4, scarlet; lobes ovate, exceeding the calyx. Native of Madagascar. Planted in house and public gardens as pot herb. Flowers : Throughout the year. Propagated by cuttings and seeds.

**Kalanchoe laciniata** (L.) Pres. Syn. 446. 1805' DC. Pl. Hist. Succ. T. 100. 1799. 1829; Clarke in Hook. f. Fl. Brit. India 2:415.1878. *Cotyledon laciniata* L. Sp. Pl. 430.1753; Cooke, Fl. Pres. Bombay 2:497.1958 (Repr. ); Naik, Fl. Marathwada 1:364.1998; Das Das et. al., Fl. Maharashtra Sts. Dicot. 1:842. 2000. "**Parabij, Zakhmhyat**".

Glabrous or hairy, succulent, erect herbs, 30-120 cm tall. Leaves very variable, the lower simple, ovate, shortly petioled or sessile, intermediate ones deeply pinnatifid with coarsely dentate-serrate segments, long petioled, the upper most entire, narrow, sessile. Flowers in dense terminal, yellow, on long panicles; peduncles long; bracts linear. Calyx segments ovate-lanceolate. Corolla yellow; tube distinctly widened towards base; segments 4, ovate-oblong, acute, hypogynous.

Native of South Africa. Planted in house and public gardens. Flowers : March to July.

**Kalanchoe olivacea** Dalz. in Dalz. and Gibs., Bombay Fl. 313, 1861; Cooke, Fl. Pres. Bombay 1 : 467. 1903; Bole and Almeida, JBNHS 78: 567. 1982; Almeida, Fl. Maharashtra. 2: 239. 1998. Das Das et. al., Fl. Maharashtra Sts. Dicot. 1:842. 2000.

Perennial, glabrous herbs, 1-2 feet tall; whole plant of olive – brown color; stem 1-2 feet tall, terete, glabrous. Leaves ovate, elliptic or broadly lanceolate, irregularly crenate – serrate, fleshy, dotted with blood – red spots, glabrous. Flowers in paniculate cymes; pedicels densely clothed with glandular viscid hairs; Calyx glandular hairy, lobes lanceolate, acute or acuminate. Corolla white, sometimes slightly tinged with pink, tube clothed outside the glandular hairs, petals ovate, acute, glandular hairy outside. Stamens 8, in 2 series, inserted on the middle of the corolla – tube, anther brown; filaments filiform. Carpels 4, free or connate at the base, attenuated into long, white, linear, slightly bifid at apex. Follicles glabrous.

Grown in gardens as pot herbs. Flowers & Fruits: October to March.

**Kalanchoe pinnata** (Lamk.) pers. Syn. 446. 1805; Backer in Van Steenis, Fl. Malesiana, Ser. I, 4(3): 199. 1951; Naik, Fl. Osmanabad 131.1979. *Cotyledon pinnatum* Lamk. Encycl. 2: 141. 1787. *Bryophyllum calycinum* Salisb. Parad. Lond. t. 3. 1805; Clarke in Hook. f. Fl. Brit. India 2: 413. 1878; *Bryophyllum pinnatum* kurz. Bailey, Man. Cult. Pl. 324. 1924; Naik, Fl. Marathwada 1: 365. 1998. "**Panphuti, Air-plant, Life plant Floppers**".

Succulent, stout, glabrous, erect herbs, 2-6 feet tall. Stem terete and hollow. Leaves variable, simple, the upper often 3-5 foliate, long petioled, opposite, fleshy becoming leathery. Leaflets very short stalked, oval – oblong or elliptic, crenate and producing young plants from the crenatures even after removal from the plant. Flowers pendent, in terminal corymbose cymes; pedicels slender. Calyx paper like, green with red lines, teeth triangular, acute. Corolla

reddish, swollen at base, constricted in the middle, twice as long as the calyx; lobes acute, triangular. Seeds not seen.

Native of Tropical Africa. Planted in gardens. Flowers & Fruits: January to April.

**Uses:** - Leaves are used in ayurvedic medicine.

**Kalanchoe tomentosa** (*K. pilosa*) Bose, Chowdhury and Sharma, Trop. Gard. Pl. 417. 1991; Ranthawa and Mukhopadhyay, Floriculture In India 300. 198. **“Panda Plant”**.

Succulent, perennial erect shrub, up to 50 cm tall. Stem erect, branched, pubescent. Leaves simple, ovate or spoon-shaped, light green soft, fleshy, upper surface concave, grooved, lower convex, ending in to blunt tip, entirely covered with silvery white felt, tip deep brown, teeth margins tinged brown. Flowers white-greenish with light-brown strips, peduncle long, reddish colour. Calyx tube, tubular, greenish with brown strips. Corolla 5-lobes. Stamens 6, filament long. Ovary superior.

Grown in gardens. Flowers & Fruits: November to January.

**Note :** Propagation by stem and leaf cutting as well as leaf bud.

## CACTACEAE

**Epiphyllum macropterum** Britton and Rose, Cactaceae IV.193.1923; Kamble and Prasanna et. al. Fl. Maharashtra Sts. Dicot. 2:83.2001. **“Brahma – Kamal ”**

Succulent, fleshy, perennial shrubs, 5-8 feet tall; unarmed, branching cactus like with large and showy flowers. Stem flat, 2- edged leaf like branches, crenate or serrate on margins, spineless, green and 8-20 cm broad, petioles small. Flowers usually large, mostly nocturnal, arise on edges of leaf, the tube longer than limb. Corolla white. Stamens elongated, numerous. Fruits oblong, red juicy, bearing a few bracts. Seeds many, black.

Native of Mexico, Central America. Grown in gardens as house plants.

Flowers & Fruits: September and November.

**Echinocactus grusonii** Hildmann. Bailey, Man. Cult. Pl. 526. 1924. **“Golden cactus.”**

Large thick, cylindrical with single depressed globose. Stem ribs, many, 30 – 40 cm tall, spines numerous, dense, golden – yellow when young, becoming pale or brownish, covered with dense mass of wool. Flowers yellow, and red, opening in bright sunlight; sessile ; perianth segments light orange or red on outsides. Stamens infinite, yellow fused at the base. Ovary naked, stigma free, yellow. Fruits not seen.

Native of S.W.U.S. and Mexico. Planted in gardens, house gardens. Flowers : March to April.

**Opuntia rufida** Bose, Chowdhury and Sharma, Trop. Gard. Pl. 370. 1991. **“Cinnamon cactus”**.

Plant erect, about 3-5 feet tall, trunk short, pads nearly circular, very wide, dark grayish green, elongated. Areoles large, close set, arranged in diagonal lines, brownish red, spines absent. Flowers yellow or orange-yellow. Grown in gardens.

**Schlumbergera bridgesii** Bose, Chowdhury and Sharma, Trop. Gard. Pl. 377. 1991. **“Christmas Cactus”**.

Bushy shrub, 1-5 m tall. Stem terete; branches of flat, green, stem initially erect, recurving later, segment elongated, with 2-3 notches on either side, spinous, spines 3-5 mm long, sharp, grayish white. Flower produces from tip of branches, 7-8 cm long, cherry red.

Grown in gardens. Flowers : March to May. Propagated by cuttings.

**Parodia magnifica** **Ball Cactus**

Perennial herbs, uniquely-shaped succulents, one - two feet tall with a shape that resembles a hot air balloon.

However, it is not quite as smooth as a balloon, with columns of spikes lining its exterior. Flowers yellow-colored grow in clusters.

Grown as most popular outdoor succulents.

## AIZOACEAE

**Mesembrythemum crystallinum** L. Bailey, Man. Cult. Pl. 257; 1924. **“Ice Plant”**

Annual succulent herbs, about 12-18 inch tall; spreading on the ground. Stem prostrate or somewhat erect, succulent, pubescent. Leaves simple, alternate, flat, fleshy, spatulate or broad – ovate, undulate, base clasping,

hairy, entire, acute, pale green, petioles hairy. Flowers in axillary solitary cymes, on long peduncles, peduncles hairy, pink or red, with 5 leaflet like lobes, lobes ovate, acute, hairy. Petal pink, divided into hair like lobes. Fruits not seen.

Native of South Africa. Grown as window plant in gardens. Flowers: December to March.

## BEGONIACEAE

**Begonia semperflorens** Link & Otto. Bailey, Man. Cult. Pl. 516. 1924; Bose, Chowdhury & Sharma, Trop. Gard. Pl. 233.1991. "**Wax Begonia**".

Perennial, annual, succulent, glabrous herbs, about 30 – 45 cm tall. Stem branched at base, little branching above, green or reddish, succulent. Leaves not lobed simple, whorled or alternate, glossy, ovate or oval to broad – oval, undulate margin tinged red, stipules large and dry, mucronate. Flowers axillary, 2 – 3 in one group or solitary, pedicels, hairy, rose red to whitish. Staminate flower with 4 sepals, green, fused at base, petal 4 in two series rose red, pistillate 4 in two series rose red, pistillate with 5 petals. Stamens many. Ovary – inferior, 2 – 3 cell. Seeds not seen.

**Var. semperflorens 'Pink pearl'** : Leaves waxy green; growth compact; flowers single, bright rose- pink.

**Var. semperflorens 'Red pearl'** : Leaves dark coppery ; flowers red.

**Var. semperflorens 'White Comet'** : Leaves waxy green; flowers white.

Native of Mexico. Planted commonly in house gardens. Flowers : October to January.

## **Sedum spurium " Roseum"**

Perennial low-growing, succulent herbs, about four to six inches tall. It is a fast grower that works great in containers or planters on a windowsill. In the summer, the roseum develops clusters of light-pink star flowers that can add a pop of color to your home decor. It can also add texture to a floral arrangement. This succulent prefers full sun to partial shade, so we recommend placing it on a windowsill that gets a decent amount of light.

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