

# 1 **Classification and Cultivars**

## 2 **Two Tribes**

- Clauseneae
- Citreae has 3 Subtribes
  - Triphasiinae
  - Balsamocitrineae
  - Citrinae

## 3 ***Fortunella***

- Four species - Small trees and shrubs.
- Flowers later than *Citrus*.
- Freeze - hardy
- Small fruit
  - ‘Meiwa’ and ‘Marumi’ - round
  - ‘Nagami’ ovate

## 4 ***Poncirus***

- Two trifoliolate spp.
  - *trifoliata* ‘Flying Dragon’
  - *poyandra*
- Deciduous
- Thorny, Cold hardy, long thorns
- Makes great hedges , rootstocks

## 5 ***Microcitrus***

- Northeastern rainforest Australia
- Moderate-sized trees.
- Leaves are unifoliolate dimorphic
- *Microcitrus australasica*
  - Resistant to burrowing nematode and phytophthora
- Micro leaves, flowers, and fruit

## 6 ***Clymenia***

- Unifoliolate acuminate leaves tapering into very short petiole.
- Branches are thornless.
- Style shorter than other true Citrus and stigma is larger and flattened

- Fruit - ovoid, thin peeled, many oil glands, many small seeds.

7  ***Eremocitrus***

- Xerophytic native of Australia
- Spreading long drooping branches
- Leaves unifoliate, greyish green, thick, leatherly, and lanceolate.
- Sunken stomata, freeze hardy
- Ideal xeroscape plant.

8  ***Citrus* - Subgenus *Eucitrus***

- Vesicles - no acrid or bitter oil
- *C. medica* (Citrons)
  - Uses - candied peel,
    - Jewish ceremony
    - Exocortis indicator

9  ***Citrus limon* (Lemons)**

- Commerce
  - ‘Lisbon’ and ‘Eureka’
- Dooryard
  - Meyer (Lemon hybrid)
- Rough Lemon
  - Rootstock

10  **Lemon Hybrids**

- Lemonage (lemon x sweet orange)
- Lemonime (lemon x lime)
- Lemandrin (lemon x mandarin)
- *Eremolemon* (*Eremocitrus* x lemon) - Australian Desert Lemon

11  ***Citrus aurantifolia* (Limes)**

- ‘Key’ or ‘Mexican’ limes
- ‘Tahiti’ or ‘Persian’ limes some are triploids and seedless
- *C. macrophylla* (lime-like fruit)
  - Rootstock in California
- Lemonimes (lime x lemon)
- Limequats (lime x kumquat)

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- Not grown either in Tahiti or Persian (Iran)
- Seedless and marketed when still dark green

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### ***C. aurantium* - Sour Orange**

- 'Seville' in Southern Europe
  - Orange marmalade
- 'Bouquet' & 'Bergamot'
- - Italy
  - Essential oil
- Many forms like 'Bittersweet'
  - Rootstock - High quality fruit.

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### ***C. sinensis* - Sweet Orange**

- Round oranges
  - 'Valencia' - Worlds most imp.
  - 'Parson Brown', 'Hamlin', 'Pineapple' - US
  - 'Shamouti' - Israel
  - 'Cadenera' - Spain
  - 'Pera' - Brazil

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### ***C. sinensis* - Navel Oranges**

- Secondary fruit - easy ID
- Fresh fruit - Gift packs
- Lower acid thus sweeter taste
- Limonin in juice can be removed
- Environmental stresses
- Best quality in cooler climates

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### **California Navel Oranges**

- 'Washington' most widely grown
  - Old line replaced by nucellars
- 'Atwood', 'Fisher', 'Newhall' are earliest navels
- 'Lane Late' - late maturing, fruit hold well on tree.

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### **Spanish Navels**

- 'Navelina' sport of 'Washington' at Riverside, CA - 1910

- Early season, smaller tree, and holds well on tree.
- ‘Navelate’ sort of ‘Washington’ late maturing - vigorous tree.

19  **Texas Navels**

- ‘Washington’ - most widely planted navel in world
- ‘Marrs’ - limb sport of ‘Washington’ lacks distinct secondary fruit.
- Early maturing, low acid.
- Lower in limonin.

20  **Florida Navels**

- ‘Summerfield’ early maturing - adapted to humid climate.
- Nucellar selection - F-56-11 most widely used in new plantings.

21  **Brazilian Navels**

- ‘Baianinha’ - ‘Bahia’ limb sport
  - Less vigorous and smaller secondary fruit, thus
    - Less prone to fruit drop
    - Adapted to hot, arid climate

22  **Australian Navels**

- ‘Leng’ major navel orange
  - ‘Washington’ sport - 1934
  - Small size, thinner peel.
- ‘Lane Late’ - late season but subject to regreening and granulation.

23  **South African Navels**

- South Africa
  - ‘Palmer’ nucellar seedling of ‘Washington’ - 1930s
    - Vigorous, productive, hold well on tree
  - ‘Robyn’ - cooler location

24  **Venezuelan Navels**

- ‘Cara Cara’
  - Red flesh even in lowland tropics (uncharacteristic of blood oranges)

25  **Pigmented Oranges**

- Grown in Mediterranean climates with hot days and cool nights.

- Anthocyanin pigment rather than
  - lycopene as in grapefruit
  - carotenoid as in oranges
- ‘Tarocco’, ‘Sanguinello’, ‘Maltaise’

26  **Acidless or Sugar oranges**

- Low acid levels
- Therapeutic properties
- Succari-Egypt
- Mosambi-East African/Portuguese

27  ***C. sinensis* Hybrids**

- Citranges (sweet x trifoliolate)
- Citrangors (sweet x citrange)
- Citrangequats (citrange x kumquat)
- Citrangeremos (citrange x *Euremocitrus*)

28  ***Citrus reticulata***

- Satsuma group
  - Primarily grown in Japan
  - Important in Louisiana and for dooryard in Gulf Coast
- Tangerine group
  - Commercial in Fla. - ‘Dancy’ and ‘Clementine’ -deep orange

29  **Dancy Tangerine**

- Production problems
- alternate bearing
- Susceptible to *Alternaria*

30  **Swingle and Tanaka Differ**

- Satsuma
  - *C. reticulata* - *C. unshiu*
- ‘Dancy’
  - *C. reticulata* - *C. tangerina*
- ‘Cleopatra’
  - *C. reticulata* - *C. reshni*

31  **More differences**

- 'King'
  - tangor? *C. noblis*
- 'Temple'
  - tangor? *C. temple*
- 'Calamondin'
  - (*C. reticulata* x *C. ichangensis*)
    - *C. madurensis*

32  **Breeder's Delight**

- 'Clementine' and 'Temple' produce only monoembryonic seeds.
- No nucellars.

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### **Temple Orange**

- Named after W.C. Temple from FL.
- Hybrid of mandarin and orange

34  **Murcott or Honey Tangerine**

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- It is hybrid of unknown parentage
  - Fruits are borne terminally so they are vulnerable to wind.

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### **Ponkan (Chinese Honey orange, Nagpur Santra)**

- Widely grown mandarin in the world
- Alternate bearing

36  **Tangerine x Grapefruit**

- 'Orlando' tangelo
- 'Minneola' tangelo
- 'Page' orange
- 'Robinson' tangerine
- 'Nova' tangelo
- 'Ugli' tangelo

37  **Tangelos**

- Commercial - 'Orlando' and 'Minneola'
  - 'Dancy' x 'Duncan'
    - Vigorous

- Freeze hardy
- Weakly parthenocarpic

38  **Tangelos Continued**

- Fruit set by either
  - Cross pollination
  - GA3
- Which would be best for fresh market?

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**Orlando tangelo**

- Duncan grapefruit x Dancy tangerine
- leaves cup-shaped
- seedy

40  **Orlando**

- Most cold hardy of all comm. citrus except satsuma.
- Oblate to subglobose
- Seedless to 10 - 20 seeds
- + correlation between fruit size and seed number.
- Harvest between Dec - Jan NH

41  **Orlando Continued**

- Pollinators
  - ‘Temple’
  - ‘Robinson’
- More Nitrogen required than for round oranges because tree is more vigorous.

42  **Minneola Tangelo**

- 2 • Duncan x Dancy
- Cold-resistant
- Distinct flavor being rich (from Dancy) and tart from Duncan).

43  **Minneola**

- Vigorous tree

- **Tree - large and spreading**
- **Leaves - large, pointed laminae**
- **Petioles - moderate size**
- **Fruit - large obovate with neck**
- **Color - Deep reddish orange.**

44  **Minneola Continued**

- **Juice flavor - excellent**
- **Peel moderately adherent - finely pebbled**
- **Seed 0 - 20**
- **Matures - Jan to March - NH**  
– July to August - SH

45  **Minneola Continued**

- **Pollinators are 'Temple' and 'Robinson'**
- **'Orlando' will not pollinate 'Minneola'**
- **Large solid blocks set seedless fruits with GA3**

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 **Nova (Clemenvilla, Suntina)**

- **Fina Clementine x Orlando tangelo**
- **Seedless when grown apart from pollinating varieties**
- **Spain and Israel**

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- **Minneola x Clementine**
- **Sensitive to Bromacil**
- **Usually referred to as 'orange'**