

Which citrus fruits will come true to type from seed?

Tom McClendon writes in *Hardy Citrus for the South East*:

“Most common citrus such as oranges, grapefruit, lemons and most mandarins are polyembryonic and will come true to type. Because most citrus have this trait, hybridization can be very difficult to achieve.... This unique characteristic allows amateurs to grow citrus from seed, something you can't do with, say, apples.” [12]*

Monoembryonic (don't come true)

Meyer Lemon
Nagami Kumquat
Marumi Kumquat
Pummelos
Temple Tangor
Clementine Mandarin
Poncirus Trifoliata

Polyembryonic (come true)

Most Oranges
Changshou Kumquat
Meiwa Kumquat (mostly polyembryonic)
Most Satsumas and Tangerines
Most Lemons
Most Limes
Grapefruits
Tangelos

Highly monoembryonic citrus types:

Will produce *zygotic monoembryonic* seeds that will **not** come true to type.

Many “true Citrus species” such as

Citrus cavaleriei (C. ichangensis) Ichang papeda
Citrus glauca (Eremocitrus glauca) Australian desert lime

Citrus indica

Citrus japonica (Fortunella) most kumquats
Citrus maxima pomelo (pummelo, Schaddock)
Citrus medica citron

And the citron hybrids:

Citrus × latifolia Persian lime (Tahiti lime, Bearss lime)

Citrus × bergamia Bergamot.

One true citrus species, mandarin Citrus reticulata, is highly variable. The following are monoembryonic: Clementines (Marisol, Oronules, Loretina, Beatriz, Clemenpons, Arrufatina, Esbal, Oroval, Clemenules,

Orogrande, Tomatera, Fina, Nour, Hernandina, Clementard.)

Ellendale

Encore

Fortune

Fremont (50% monoembryonic)

Temple

Ugli

Umatilla

Wilking

Highly polyembryonic citrus types : will mostly produce nucellar polyembryonic seeds that will grow true to type.

Citrus × aurantiifolia Mexican lime (Key lime, West Indian lime)

Citrus × insitorum (×Citroncirus webberii) Citranges, such as Rusk, Troyer etc.

Citrus × jambhiri 'Rough lemon', 'Rangpur' lime, 'Otaheite' lime

Citrus × limettioides Palestine lime (Indian sweet lime)

Citrus × microcarpa 'Calamondin'

Citrus × paradisi Grapefruit (Marsh, Star Ruby, Redblush, Chironja, Smooth Flat Seville)

Citrus × sinensis Sweet oranges (Blonde, navel and blood oranges)

Citrus amblycarpa 'Nasranan' mandarin

Citrus depressa 'Shekwasha' mandarin

Citrus karna 'Karna', 'Khatta'

Citrus kinokuni 'Kishu mandarin'

Citrus lycopersicaeformis 'Kokni' or 'Monkey mandarin'

Citrus macrophylla 'Alemow'

Citrus reshni 'Cleopatra' mandarin

Citrus sunki (Citrus reticulata var. austera) Sour mandarin

Citrus trifoliata (Poncirus trifoliata) Trifoliolate orange

The following mandarin varieties are polyembryonic:

Dancy

Emperor

Empress

Fairchild

Kinnow

Mediterranean (Avana, Tardivo di Ciaculli)

Naartje

Nova (Clemenvilla)

Ortanique

Ponkan

Sampson

Satsumas (Hashimoto, Okitsu, Clausellina, Owari)

Willowleaf

The following lemon types are polyembryonic:

Fino (Primofiori)

Verna (Berna)

Eureka

Lisbon

And a few more citrus types:

Marrakech limetta

Fukushu kumquat (Fortunella obovata)

Nanshōdaidai