بسم الله الرحمن الرحيم

والتين والزيتون (۱) وطور سنين (۲)

قسم به انجیر و زیتون (۱) و سوگند به طور سی

لقد خلقنا الإنسان في أحسن تقويم (٤) ثم رددناه أسفل سافلين

که ما انسان را در بهترین صورت و نظام آفریدیم (٤) سپس او را به پایین ترین

إلا الذين آمنوا وعملوا الصالحات فلهم أجر

مگر کسانی که ایمان آورده و اعمال صالح انجام داده اند

# *Ficus carica* L. (Moraceae)

- The fig tree is indigenous to Persia, Asia Minor and Syria.
- Fig has been proposed to be the first domesticated plant.
- There is frequent allusions to fig in the Hebrew and Christian Bibles and the Koran.
- Most of the world's fig production occurs in the Mediterranean basin.

# The Incredible Edible Fig

*Ficus carica*

# History

- The fig is believed to be indigenous to Western Asia and to have been distributed by man throughout the Mediterranean area. It has been cultivated for thousands of years, remnants of figs having been found in excavations of Neolïthic sites traced to at least 5,000 B.C.

- Figs were introduced into England some time between 1525 and 1548. It is not clear when the common fig entered China but by 1550 it was reliably reported to be in Chinese gardens. European types were taken to China, Japan, India, South Africa and Australia.

- The first figs in the New World were planted in Mexico in 1560. The fig reached Virginia in 1669.

- Figs were introduced into California when the San Diego Mission was established in 1769. Later, many special varieties were received from Europe and the eastern United States.

## سطح زیر کشت، میزان تولید و عملکرد محصولات باغی (دایمی) کشور
## به تفکیک محصول در سال ۱۳۸۷

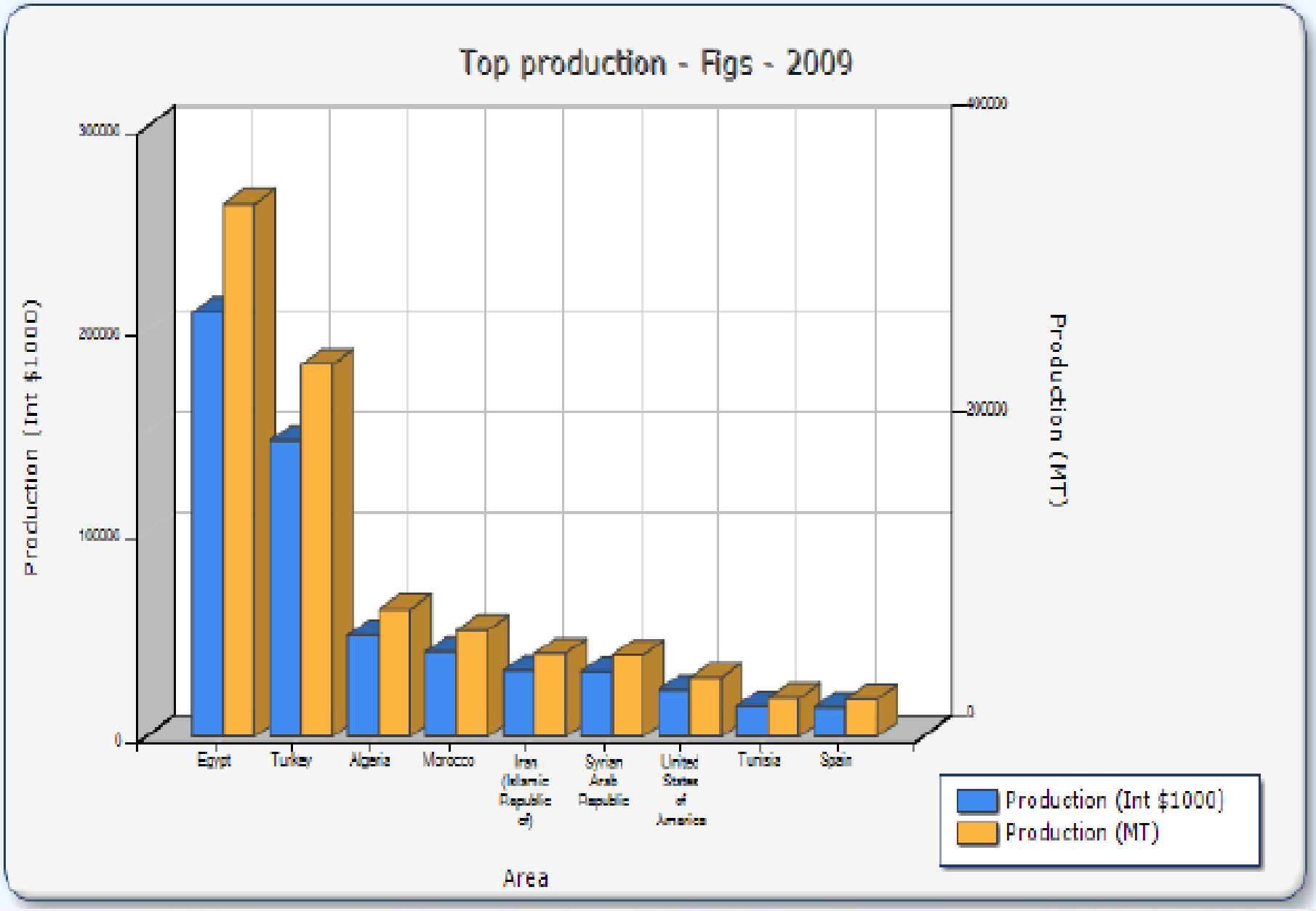
جدول شماره ۲-۱ (( واحد: هکتار ))

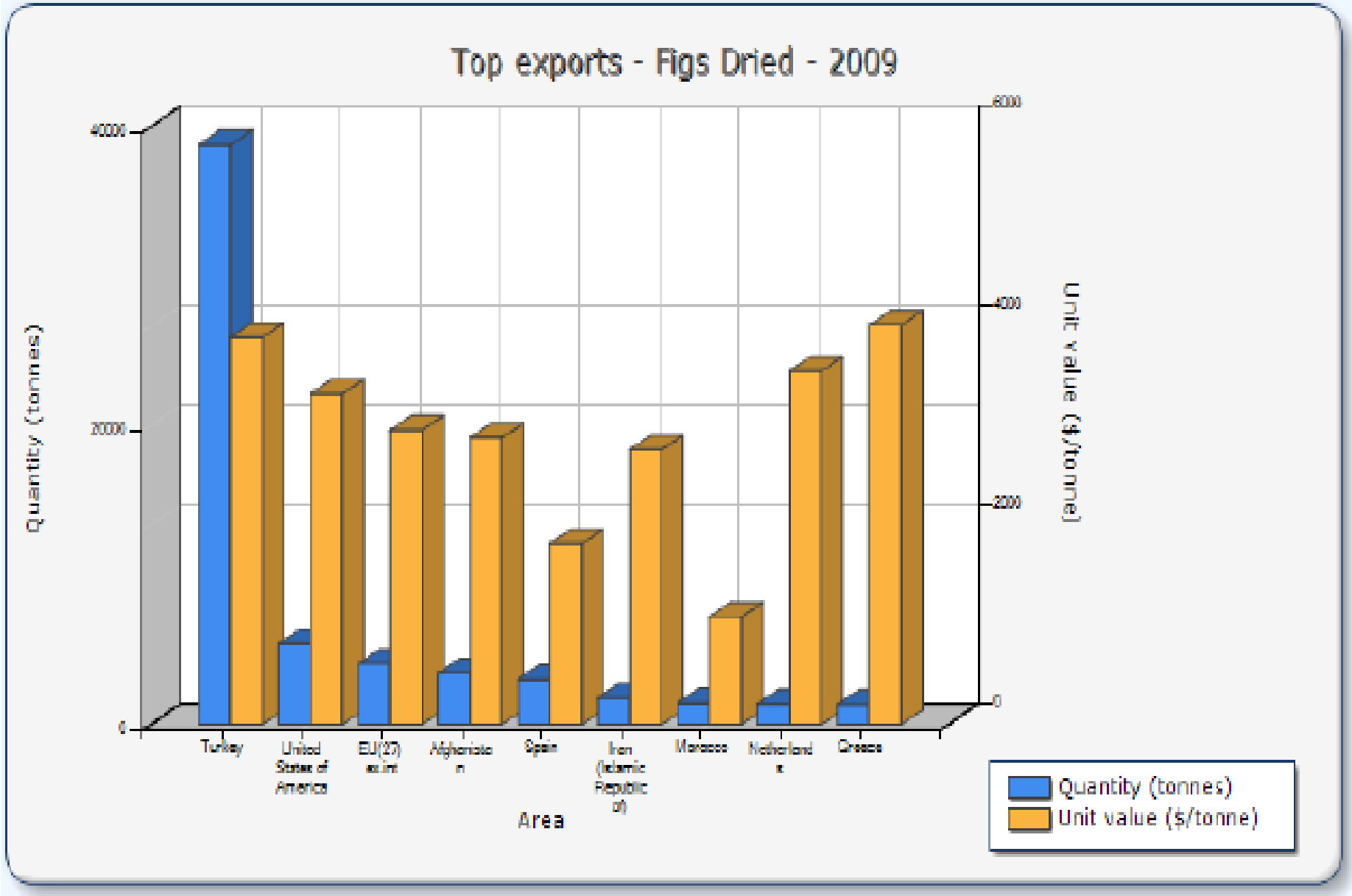
| نام محصول | سطح بارور | | | سطح غیربارور | | | جمع سطح بارور و غیربارور | | |
|---|---|---|---|---|---|---|---|---|---|
| | آبی | دیم | جمع | آبی | دیم | جمع | آبی | دیم | جمع |
| سیب | ۱۷۳۴۹۵,۸ | ۳۵۵,۳ | ۱۷۳۸۵۱,۲ | ۵۴۶۹۶,۷ | ۵۲,۴ | ۵۴۷۴۹,۱ | ۲۲۸۱۹۲,۵ | ۴۰۷,۷ | ۲۲۸۶۰۰,۲ |
| گلابی | ۱۰۳۷۶,۶ | ۲۵۴,۹ | ۱۰۶۳۱,۵ | ۱۸۳۱,۲ | ۳۰,۶ | ۱۸۶۱,۸ | ۱۲۲۰۷,۸ | ۲۸۵,۴ | ۱۲۴۹۳,۳ |
| به | ۴۶۷۱,۵ | ۱۷۶ | ۴۸۴۷,۵ | ۱۲۳۵,۲ | ۱۶,۹ | ۱۲۵۲ | ۵۹۰۶,۷ | ۱۹۲,۹ | ۶۰۹۹,۵ |
| آلبالو | ۱۹۹۵۴,۵ | ۲۵,۱ | ۱۹۹۷۹,۶ | ۴۲۹۱,۵ | ۷,۷ | ۴۲۹۹,۲ | ۲۴۲۴۶ | ۳۲,۸ | ۲۴۲۷۸,۸ |
| گیلاس | ۲۷۹۴۱,۹ | ۲۳۴,۱ | ۲۸۱۷۶ | ۵۱۹۸,۳ | ۵۱,۸ | ۵۲۵۰,۱ | ۳۳۱۴۰,۲ | ۲۸۵,۹ | ۳۳۴۲۶,۱ |
| گوجه | ۱۰۲۴۳,۷ | ۲۲۹۴,۹ | ۱۲۵۳۸,۶ | ۲۵۹۵,۵ | ۶۴۱,۲ | ۳۲۳۶,۷ | ۱۲۸۳۹,۲ | ۲۹۳۶,۱ | ۱۵۷۷۵,۳ |
| آلو | ۱۸۹۷۲,۷ | ۲۰,۸ | ۱۸۹۹۳,۵ | ۳۷۲۷ | ۵۱,۱ | ۳۷۷۸,۱ | ۲۲۶۹۹,۷ | ۷۱,۹ | ۲۲۷۷۱,۶ |
| هلو | ۳۹۴۸۵,۸ | ۱۱۳۷ | ۴۰۶۲۲,۸ | ۱۵۷۵۶,۷ | ۱۸۳ | ۱۵۹۳۹,۷ | ۵۵۲۴۲,۵ | ۱۳۲۰ | ۵۶۵۶۲,۵ |
| شفتالو | ۱۱۳۳,۴ | ۳۲,۲ | ۱۱۶۵,۶ | ۱۸۸,۸ | ۱ | ۱۸۹,۸ | ۱۳۲۲,۲ | ۳۳,۲ | ۱۳۵۵,۴ |
| زردآلو و قیسی | ۵۳۹۰۷,۴ | ۴۲,۳ | ۵۳۹۴۹,۷ | ۱۰۰۰۶,۵ | ۱,۷ | ۱۰۰۰۸,۲ | ۶۳۹۱۳,۹ | ۴۴ | ۶۳۹۵۷,۹ |
| شلیل | ۱۰۶۴۴,۴ | ۴۴,۱ | ۱۰۶۸۸,۵ | ۳۸۰۸,۶ | ۱۳,۵ | ۳۸۲۲,۱ | ۱۴۴۵۳ | ۵۷,۶ | ۱۴۵۱۰,۶ |
| انگور | ۲۰۰۸۲۶,۷ | ۷۶۹۱۹,۸ | ۲۷۷۷۴۶,۵ | ۱۹۳۷۹,۹ | ۴۶۰۳,۱ | ۲۳۹۸۳ | ۲۲۰۲۰۶,۶ | ۸۱۵۲۲,۹ | ۳۰۱۷۲۹,۵ |
| انواع توت و شاه توت | ۶۰۲۸,۱ | ۳۵۳,۱ | ۶۳۸۱,۲ | ۹۰۸,۷ | ۱,۲ | ۹۰۹,۹ | ۶۹۳۶,۷ | ۳۵۴,۳ | ۷۲۹۱,۱ |
| توت فرنگی | ۲۲۳۳,۱ | ۰ | ۲۲۳۳,۱ | ۰ | ۰ | ۰ | ۲۲۳۳,۱ | ۰ | ۲۲۳۳,۱ |
| تمشک | ۲۷ | ۰ | ۲۷ | ۳,۸ | ۰ | ۳,۸ | ۳۰,۹ | ۰ | ۳۰,۹ |
| پسته | ۳۷۹۱۷۶,۷ | ۲۱,۳ | ۳۷۹۱۹۸ | ۵۱۸۹۶,۱ | ۵۵,۹ | ۵۱۹۵۲ | ۴۳۱۰۷۲,۸ | ۷۷,۳ | ۴۳۱۱۵۰ |
| بادام | ۸۹۰۵۱,۱ | ۵۷۶۱۰,۷ | ۱۴۶۶۶۱,۸ | ۲۱۶۵۱,۳ | ۱۶۹۸۱,۶ | ۳۸۶۳۲,۹ | ۱۱۰۷۰۲,۵ | ۷۴۵۹۲,۳ | ۱۸۵۲۹۴,۷ |
| گردو | ۱۵۰۵۱۲,۳ | ۵۲۵۲,۴ | ۱۵۵۷۶۴,۷ | ۵۴۳۹۳,۵ | ۳۵۱۱,۶ | ۵۷۹۰۵ | ۲۰۴۹۰۵,۸ | ۸۷۶۳,۹ | ۲۱۳۶۶۹,۷ |
| فندق | ۱۳۰۵۸,۴ | ۹۷۸۸,۹ | ۲۲۸۴۷,۳ | ۱۴۷۸,۸ | ۸۶۶ | ۲۳۴۴,۸ | ۱۴۵۳۷,۲ | ۱۰۶۵۴,۹ | ۲۵۱۹۲,۱ |
| سنجد | ۱۳۹۰,۲ | ۲ | ۱۳۹۲,۲ | ۳۲۷,۸ | ۰ | ۳۲۷,۸ | ۱۷۱۸ | ۲ | ۱۷۲۰ |
| زالزالک | ۳۰,۳ | ۵۷,۲ | ۸۷,۵ | ۱۰ | ۱,۳ | ۱۱,۳ | ۴۰,۳ | ۵۸,۵ | ۹۸,۸ |
| زرشک | ۸۵۰۴ | ۳,۲ | ۸۵۰۷,۲ | ۲۷۸۰,۹ | ۱۳۸,۳ | ۲۹۱۹,۲ | ۱۱۲۸۴,۹ | ۱۴۱,۵ | ۱۱۴۲۶,۴ |
| سماق | ۱۱۲ | ۹۳۴,۸ | ۱۰۴۶,۸ | ۲,۴ | ۵۵,۲ | ۵۷,۶ | ۱۱۴,۳ | ۹۹۰ | ۱۱۰۴,۴ |
| ازگیل | ۲۲۷,۶ | ۲۹۳,۳ | ۵۲۰,۹ | ۷۴,۵ | ۳۲,۶ | ۱۰۷,۱ | ۳۰۲ | ۳۲۵,۹ | ۶۲۸ |
| زغال اخته | ۹۳۶,۶ | ۰ | ۹۳۶,۶ | ۱۵۷,۷ | ۰ | ۱۵۷,۷ | ۱۰۹۴,۳ | ۰ | ۱۰۹۴,۳ |
| عناب | ۷۴۸,۱ | ۰ | ۷۴۸,۱ | ۸۴,۶ | ۰ | ۸۴,۶ | ۸۳۲,۸ | ۰ | ۸۳۲,۸ |
| خرما | ۱۸۶۷۳۸,۳ | ۱۸۱۳۷ | ۲۰۴۸۷۵,۳ | ۳۶۷۷۲,۳ | ۲۷۸۲ | ۳۹۵۵۴,۳ | ۲۲۳۵۱۰,۶ | ۲۰۹۱۹ | ۲۴۴۴۲۹,۶ |
| انجیر | ۳۸۲۱,۵ | ۳۵۲۵۲,۵ | ۳۹۰۷۴ | ۲۷۳۴,۵ | ۲۴۸۵,۱ | ۵۲۱۹,۶ | ۶۵۵۶ | ۳۷۷۳۷,۶ | ۴۴۲۹۳,۶ |

| آمار محصول انجیر به تفکیک استان سال ۱۳۸۷ (تن) | جمع | آبی | دیم |
|---|---|---|---|
| آذربایجان شرقی | ۱۳۲،۲ | ۱۳۲،۲ | ۰ |
| آذربایجان غربی | ۱۷،۶ | ۱۷،۶ | ۰ |
| اردبیل | ۱،۹ | ۱،۹ | ۰ |
| اصفهان | ۲۰۳،۹ | ۲۰۳،۹ | ۰ |
| ایلام | ۵۰۸،۷ | ۵۰۸،۷ | ۰ |
| بوشهر | ۱۱۹ | ۱۱۹ | ۰ |
| تهران | ۲۳۸،۳ | ۲۳۸،۳ | ۰ |
| چهار محال و بختیاری | ۱۹۶،۵ | ۱۹۶،۵ | ۰ |
| خراسان جنوبی | ۵۱۸،۳ | ۴۰۴،۲ | ۱۱۴ |
| خراسان رضوی | ۲۰،۲ | ۲۰،۲ | ۰ |
| خراسان شمالی | ۲۸،۹ | ۲۸،۹ | ۰ |
| خوزستان | ۷۳۰،۷ | ۶۷۸ | ۵۲،۷ |
| زنجان | ۸ | ۸ | ۰ |
| سمنان | ۵۳۱،۴ | ۵۳۱،۴ | ۰ |
| سیستان و بلوچستان | ۹۲۹،۱ | ۹۲۹،۱ | ۰ |
| فارس | ۲۸۶۷۵،۶ | ۷۳۴،۷ | ۲۷۹۴۰،۹ |
| قزوین | ۱۲،۶ | ۱۲،۶ | ۰ |
| قم | ۱۹،۴ | ۵،۴ | ۱۴ |
| کردستان | ۳۰۴،۹ | ۲۸۴،۴ | ۲۰،۶ |
| کرمان | ۹۷۹،۱ +۳۲۵،۶= ۱۳۰۴/۷ | ۹۷۹،۱ +۳۲۵،۶ | ۰ + ۰ |
| کرمانشاه | ۵۴۸۳ | ۵۴۸۳ | ۰ |
| کهکلویه و بویراحمد | ۵۴۹،۹ | ۵۳۵،۳ | ۱۴،۷ |
| گلستان | ۳۲۸،۳ | ۸۳،۵ | ۲۴۴،۸ |
| گیلان | ۸۷۶،۶ | ۶۹،۲ | ۸۰۷،۴ |
| لرستان | ۱۱۴۷۳،۵ | ۱۱۴۷۳،۵ | ۰ |
| مازندران | ۱۸۰۰،۳ | ۱۶۴۳،۸ | ۱۵۶،۶ |
| مرکزی | ۳۱۹،۷ | ۳۱۹،۷ | ۰ |
| هرمزگان | ۱۴۴۸،۱ | ۹۰۳،۲ | ۵۴۴،۹ |
| همدان | ۰ | ۰ | ۰ |
| یزد | ۲۷۵،۴ | ۲۷۵،۴ | ۰ |
| | ۵۷۰۵۶,۷ | ۲۷۱۴۶,۱ | ۲۹۹۱۰,۶ |

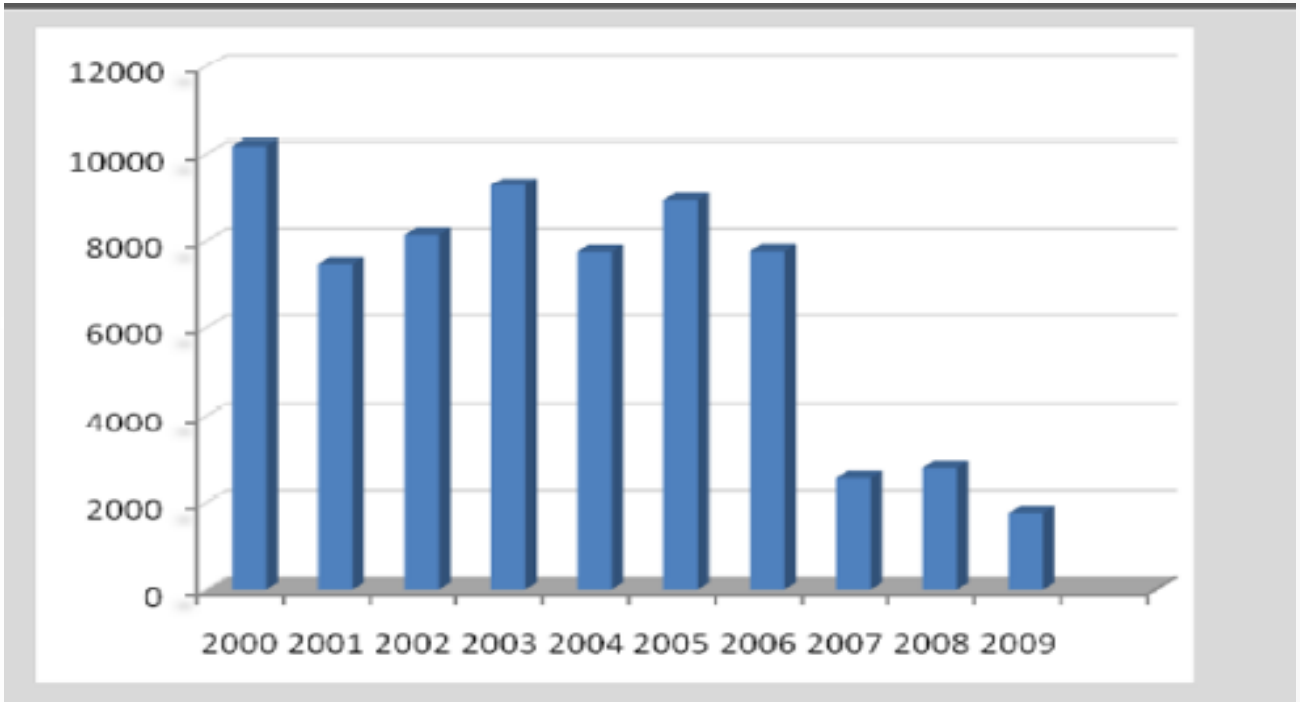
# Figs

| | 2013 | AreaName |
|---|---|---|
| 1 | 298914 | Turkey |
| 2 | 153089 | Egypt |
| 3 | 117100 | Algeria |
| 4 | 101989 | Morocco |
| 5 | 78392 | Iran (Islamic Republic of) |
| 6 | 46443 | Syrian Arab Republic |
| 7 | 30400 | Spain |
| 8 | 28253 | Brazil |
| 9 | 26212 | United States of America |
| 10 | 24000 | Afghanistan |
| 11 | 23500 | Tunisia |
| 12 | 19000 | India |
| 13 | 17581 | Portugal |
| 14 | 16914 | Albania |
| 15 | 14804 | Japan |


Top production - Figs - 2009
Production (Int $1000)
300000
200000
100000
0
400000
200000
0
Production (MT)
Egypt
Turkey
Algeria
Morocco
Iran (Islamic Republic of)
Syrian Arab Republic
United States of America
Tunisia
Spain
Area
Production (Int $1000)
Production (MT)


Top exports - Figs Dried - 2009
Quantity (tonnes)
40000
20000
0
6000
4000
2000
0
Unit value ($/tonne)
Turkey
United States of America
EU(27) ex.int
Afghanistan
Spain
Iran (Islamic Republic of)
Morocco
Netherlands
Greece
Area
Quantity (tonnes)
Unit value ($/tonne)

Export -dried fig- tones / year



| ماده مغذی | واحد | مقدار در ۱۰۰ گرم | میوه بزرگ (قطر ۶/۵ cm) ۶۴ گرم | میوه متوسط (قطر ۵/۵ cm) ۵۰گرم | میوه کوچک (قطر ۳/۸ cm) ۴۰ گرم |
|---|---|---|---|---|---|
| آب | g | ۷۹/۱۱ | ۵۰/۶۳ | ۳۹/۵۶ | ۳۱/۶۴ |
| انرژی | kcal | ۷۴ | ۴۷ | ۳۷ | ۳۰ |
| پروتئین | g | ۰/۷۵ | ۰/۴۸ | ۰/۳۸ | ۰/۳ |
| چربی کل | g | ۰/۳ | ۰/۱۹ | ۰/۱۵ | ۰/۱۲ |
| کربوهیدرات | g | ۱۹/۱۸ | ۱۲/۲۸ | ۹/۵۹ | ۷/۶۷ |
| فیبر خوراکی | g | ۲/۹ | ۱/۹ | ۱/۴ | ۱/۲ |
| قند کل | g | ۱۶//۲۶ | ۱۰/۴۱ | ۸/۱۳ | ۶/۵ |
| کلسیم | mg | ۳۵ | ۲۲ | ۱۸ | ۱۴ |
| آهن | mg | ۰/۳۷ | ۰/۲۴ | ۰/۱۸ | ۰/۱۵ |
| منیزیم | mg | ۱۷ | ۱۱ | ۸ | ۷ |
| فسفر | mg | ۱۴ | ۹ | ۷ | ۶ |
| پتاسیم | mg | ۲۳۲ | ۱۴۸ | ۱۱۶ | ۹۳ |
| سدیم | mg | ۱ | ۱ | ۰ | ۰ |
| روی | mg | ۰/۱۵ | ۰/۱ | ۰/۰۸ | ۰/۰۶ |
| ویتامین ث | mg | ۲ | ۱/۳ | ۱ | ۰/۸ |
| تیامین | mg | ۰/۰۶ | ۰/۰۳۸ | ۰/۰۳ | ۰/۰۲۴ |
| ریبوفلاوین | mg | ۰/۰۵ | ۰/۰۳۲ | ۰/۲۵. | ۰/۰۲ |
| نیاسین | mg | ۰/۴ | ۰/۲۵۶ | ۰/۲ | ۰/۱۶ |
| ویتامین ب-۶ | mg | ۰/۱۱۳ | ۰/۰۷۲ | ۰/۰۵۶ | ۰/۰۴۵ |
| فولات | mcg | ۶ | ۴ | ۳ | ۲ |
| ویتامین آ | IU | ۱۴۲ | ۹۱ | ۷۱ | ۵۷ |
| ویتامین ای | mg | ۰/۱۱ | ۰/۰۷ | ۰/۰۶ | ۰/۰۴ |
| ویتامین دی | µg | ۰ | ۰ | ۰ | ۰ |
| ویتامین کا | µg | ۴/۷ | ۳ | ۲/۴ | ۱/۹ |
| اسیدهای چرب اشباع | g | ۰/۰۶ | ۰/۰۳۸ | ۰/۰۳ | ۰/۰۲۴ |
| اسیدهای چرب غیراشباع مونو | g | ۰/۰۶۶ | ۰/۰۴۲ | ۰/۰۳۳ | ۰/۰۲۶ |
| اسیدهای چرب غیراشباع پلی | g | ۰/۱۴۴ | ۰/۰۹۲ | ۰/۰۷۲ | ۰/۰۵۸ |
| کلسترول | mg | ۰ | ۰ | ۰ | ۰ |

جدول ۲-۲: مواد غذایی انجیر خشک در مقایسه با میوه‌های معمولی

| میوه (گرم) | کالری | فیبر خوراکی (گرم) | پتاسیم (گرم) | کلسیم (میلی گرم) | آهن (میلی گرم) |
|---|---|---|---|---|---|
| انجیرهای خشک (۴۰ گرم) | ۱۱۳ | ۴/۹ | ۲۴۴ | ۵۳ | ۱/۲ |
| سیب‌ها (۱۵۴ گرم) | ۹۱ | ۳ | ۱۷۷ | ۱۱ | ۰/۳ |
| موزها (۱۲۶ گرم) | ۷۵ | ۱/۷ | ۳۲۴ | ۴/۹ | ۰/۳ |
| خرماها (۴۰ گرم) | ۱۱۳ | ۳/۸ | ۲۴۰ | ۱۰ | ۰/۲ |
| انگورها (۱۳۸ گرم) | ۹۸ | ۰/۸ | ۲۵۵ | ۱۵ | ۰/۴ |
| پرتقال‌ها (۱۵۴ گرم) | ۷۲ | ۲/۹ | ۲۷۹ | ۶۲ | ۰/۲ |
| آلوها (۴۰ گرم) | ۱۰۹ | ۲/۴ | ۲۹۰ | ۷/۲ | ۰/۶ |
| کشمش‌ها (۴۰ گرم) | ۱۲۶ | ۲/۳ | ۳۰۶ | ۱۶ | ۱/۲ |
| توت فرنگی‌ها (۱۴۷ گرم) | ۱۴۷ | ۲/۲ | ۲۴۴ | ۲۰/۶ | ۰/۶ |

منبع: گزارش هیأت مشورتی انجیر کالیفرنیا[1] (۱۹۹۸).

# The Fig Ficus carica

- The fig is a picturesque deciduous tree, typically to a height of 10 - 30 ft. and spreading wider than they are tall. Fig trees often grow as a multiple-branched shrub.
- Fig wood is weak and decays rapidly. The twigs are pithy rather than woody.
- The succulent trunk and branches are unusually sensitive to heat and sun damage, and should be whitewashed if particularly exposed.
- Roots are invasive and greedy, traveling far beyond the tree canopy.
- The sap contains copious milky latex that is irritating to human skin.

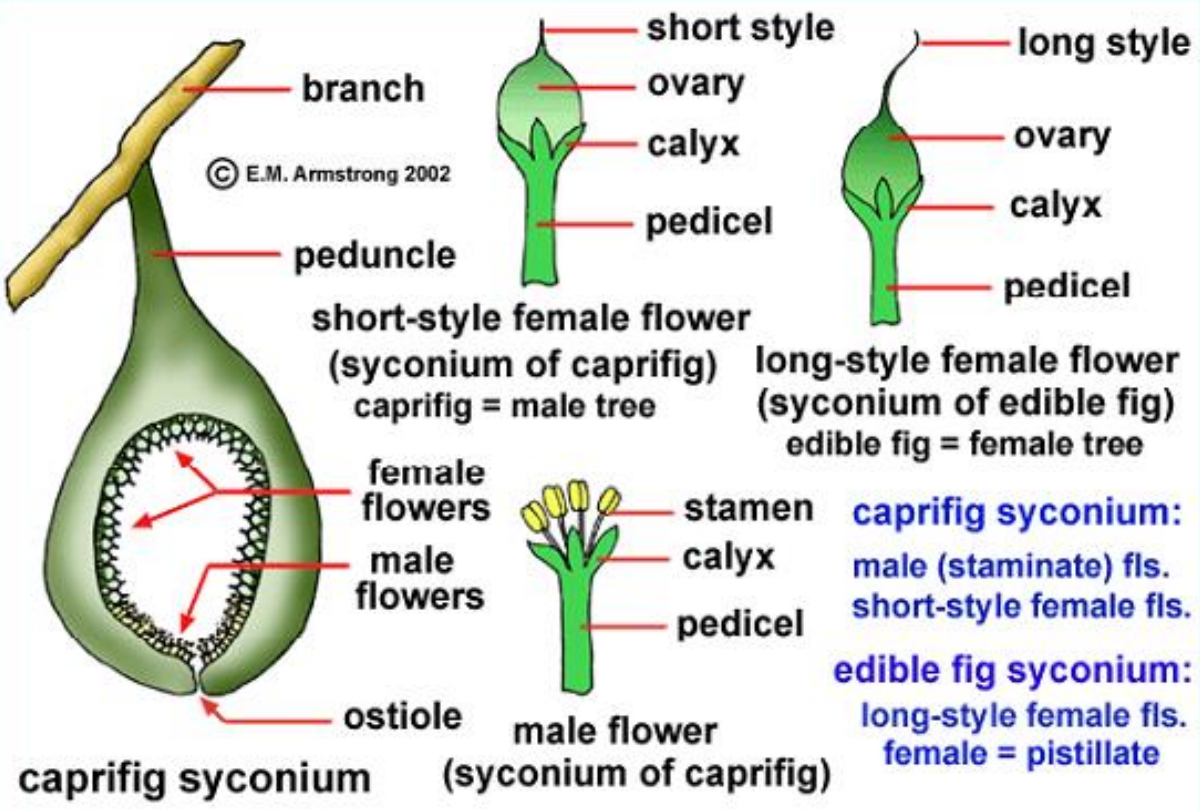
# The Fig Synconium

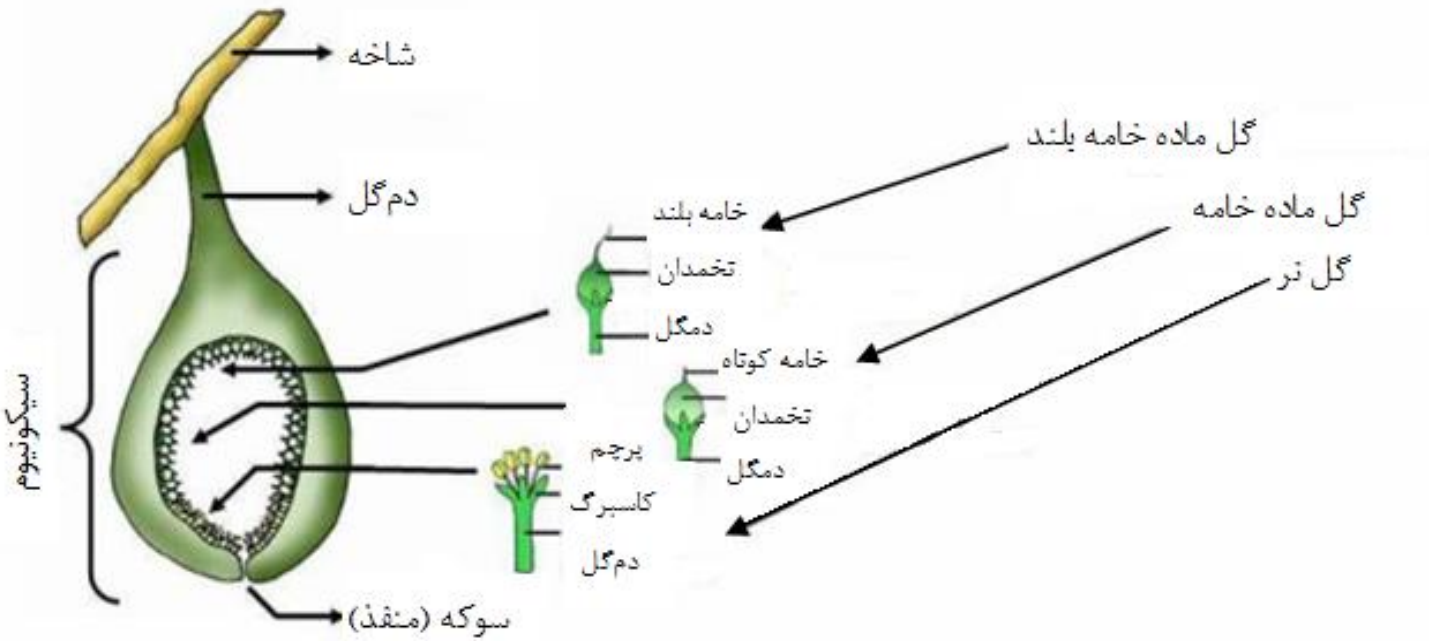
- The syconium is what most people associate with the tasty fruit of a fig, but technically it is not a true fruit. It is a complex inflorescence (flower cluster) consisting of a hollow, fleshy, flask-shaped modified stem lined on the inside with numerous tiny unisexual flowers.
- **Ficus carica** has 2 sexual forms, the "male" caprifig and the “female” tree which produces the edible fig.
- The caprifig is monoecious [i.e. with separate male (staminate) flowers and separate female short-style (pistillate) flowers. It is functionally male because it produces pollen.
- Edible figs contain only long-style female flowers.
- Since functional male trees are hermaphroditic, **Ficus carica** is usually considered gynodioecious rather than dioecious.

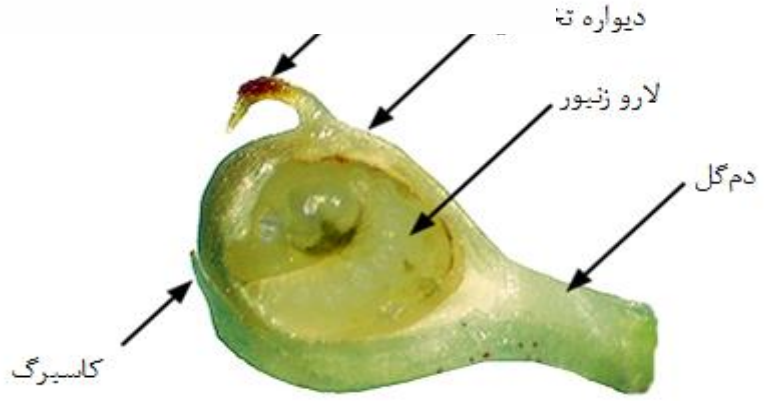
# The Synconium of the Caprifig:

- The Caprifig normally produces a small non-edible fruit; however, the flowers inside the Caprifig fruit produce pollen. This pollen is essential for fertilizing fruit of the Smyrna and San Pedro types of fig.

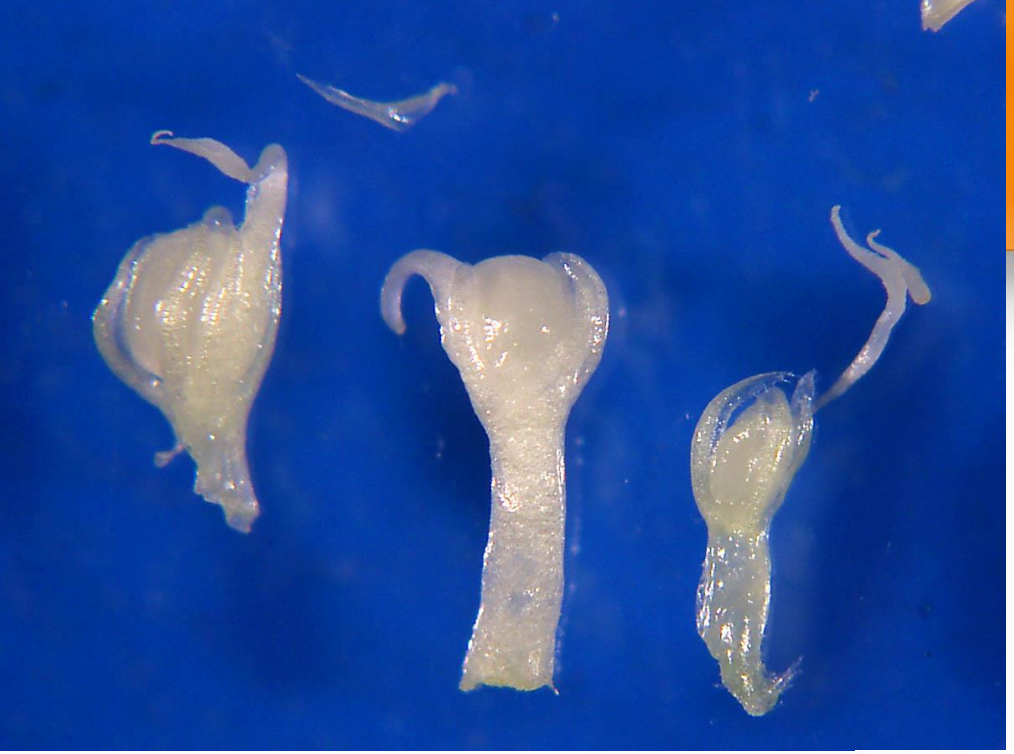
## Synconium of the Caprifig (Male Tree)



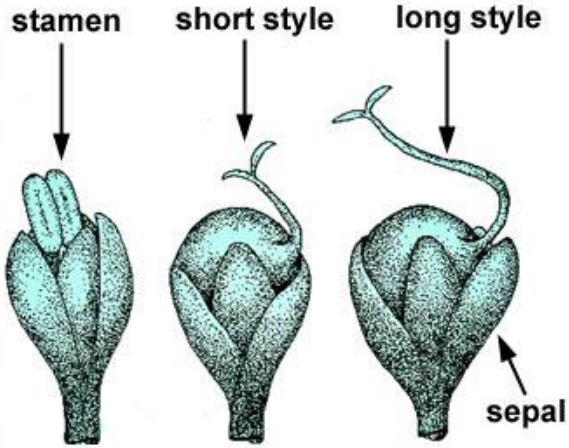



گل ماده خامه‌کوتاه درون سیکونیوم یک برانجیر




view inside a syconium




male flower female flowers

© E.M. Collins 2001

# The Fig Ostiole (Eye)

- The ostiole is the opening at the apex of the fig through which female fig wasp enter the fig to pollinate the flowers and to lay their eggs.
- Fresh figs for the consumer market usually centers on parthenocarpic cultivars. These varieties do not need pollination to produce fruit.
- The ostiole of fresh figs can be open or closed, depending on variety. Those fruit with closed ostiole have less problems with insect pests or diseases affecting the fruit.
- Some figs produce a drop of nectar at the ostiole that effectively blocks the opening to the “eye”.

# Horticultural Categories or Fig Types

- Cultivars of Ficus carica are classified into four categories or "types" based on sex and the need to be pollinated or "caprified" in order to set a crop. These are:

1. Caprifig-type: Has male and female flowers enclosed in the synconiom and is generally considered the "male" fig. All caprifigs are placed in this class without regard to whether the synconia persist or not.

2. Smyrna-type: Has only female flowers and needs cross-pollination by Caprifigs in order to develop normally. This crop sets virtually no breba crop.

3. San Pedro-type: Has only female flowers. Its breba crop needs no pollination to produce fruit like the common fig. Its second crop is commonly dependent on pollination.

4. Common-type: The flowers are all female and need no pollination to produce fruit (parthenocarpic fruit set). Some cultivars in this class set no breba crop, some set a moderate crop and some set a good breba crop.

# Caprifig-type:

- Caprifigs are native to Asia Minor and are grown in California for pollination (caprification) of Smyrna-type figs. Caprifigs were imported to California from Algiers in 1899.

- Caprifigs are naturalized in moist riverbeds and creeks of southern California. They occasionally appear as seedling volunteers in urbanized areas, probably dispersed by birds.

- The most common cultivars of caprifigs grown in California are: 'Brawley', 'Croisic', 'Roeding #3', and 'Stanford'.

- Several cultivated varieties of caprifigs are sweet and palatable, including the 'Cordelia', 'Brawley', 'Enderud' and 'Saleeb".

# Caprifig-type:

- Functional male caprifigs of **Ficus carica** produce three crops of syconia per year: the summer profichi, fall mammoni and overwintering mamme that mature the following spring. **Only the profichi crop produces pollen.**

- The profichi syconia contain clusters of pollen-bearing male flowers in the ostiolar region and wasps that develop from eggs laid inside the ovaries of the short-style female flowers . Wasp eggs are not laid in long-style flowers.

- Fig pollen is transferred from male flowers (stamens) on the profichi crop of caprifigs to female flowers (pistils) on the Smyrna-type figs and the second crop of figs on San Pedro-type figs by an insect called a fig wasp (*Blastophaga*).


Profichi
Synconia

# Caprifig-type:

- The profichi crop resemble edible figs, except they are filled with wasps and pollen-bearing stamens.

Branch of caprifig in early summer with mature profichi syconia.

# Breba Crop Versus Main Crop Synconia

- Brebas are the first figs of the season, setting on wood from the previous year. These typically mature in June in California.
- Brebas tend to be larger than main crop figs, are relatively scarce on the market, and tend to get a high price as fresh fruit.

- The main crop is produced on the current season's wood, maturing fruit from August through November or even later in a warm year.
- Maturity in main crop fig fruits on a single tree is sequential, beginning with development of basal fruits and progressing toward the most distal fruits.

# Common-type

- These figs develop parthenocarpically without pollination and are by far the most prevalent fig grown. The fruit does not have true seeds. The "fruit" is primarily produced on current season wood (main crop), however some varieties may produce a breba crop.

- At maturity the interior of the common-type fig contains only the remains of the flower structures, including the small gritty structures commonly called seeds. These so-called seeds usually are nothing more than unfertilized ovaries that failed to develop. They impart the resin-like flavor associated with figs.

- Over 160 cultivars of common figs are in the University of California at Davis's germplasm collection.

# San Pedro-type:

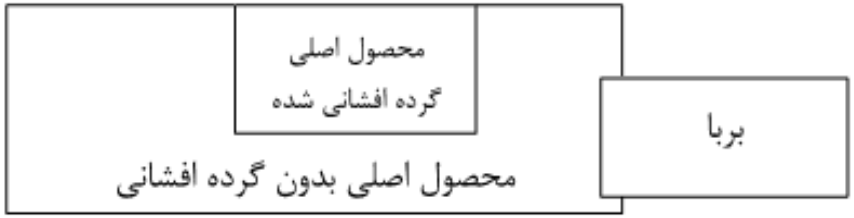
- Some San Pedro-type figs such as ‘King’ tend to retain most of their second crop without caprification.
- Without caprification, figs are light in weight, hollow in the center, with pulp that is seedless, gelatenous, and somewhat insipid in taste.
- When caprified, the fruit increase in size and weight, the flesh becomes fleshy, juicy, rich in flavor and strawberry red in color.

# Smyrna-type:

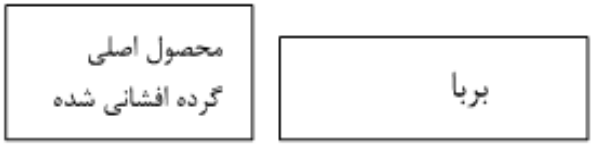
- The Smyrna-type fig was brought to California in 1881-82 but it was not until 1900 that the wasp was introduced to serve as the pollinating agent and make commercial fig culture possible.
- The Smyrna-type fig varieties produce large edible fruit with true seeds. The Blastophaga wasp and Caprifigs are required for normal fruit development. If this fertilization process does not occur, fruit will not develop properly and will fall from the tree.
- Only one cultivar 'Sari Lop' ('Calimyrna') is cultivated extensively in California. Other cultivars include 'Marabout' and 'Zidi'.
- 'Calimyrna' is the commercial variety used to make Fig Newtons.

انواع انجیر  دی  بهمن  اسفند  فروردین  اردیبهشت  خرداد  تیر  مرداد  شهریور  مهر  آبان  آذر

**انجیر معمولی**




**سان پدرو**




**ازمیر**


**برانجیر**

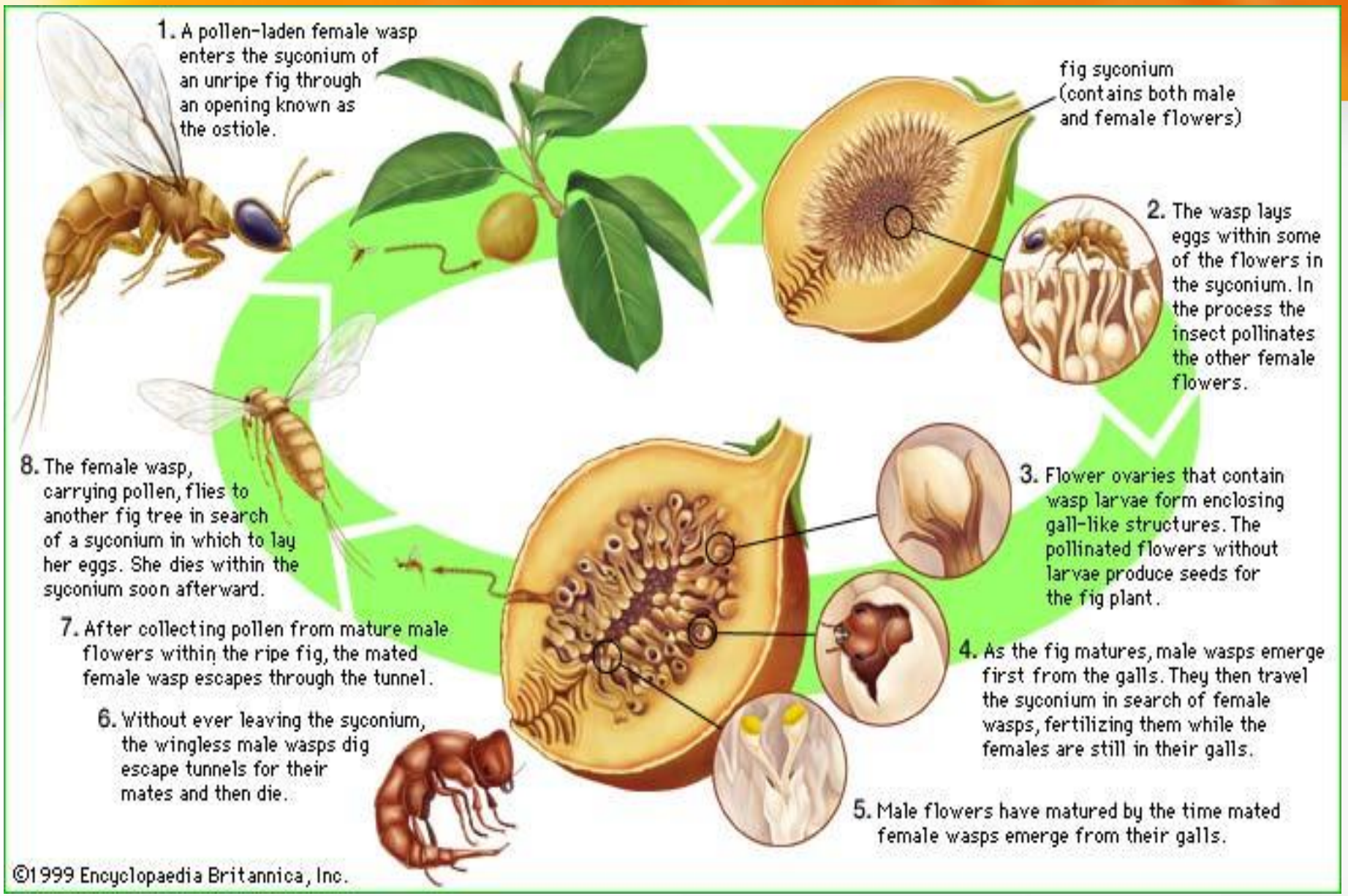
# The Story of the Fig Wasp (*Blastophaga*)

- Entomologists have learned that fig wasps overwinter as larvae in the pistils (as galls) of the fruit from the winter (mammae) crop of caprifigs.

- In April, the larva changes into an adult. A male emerges from the pistil and promptly impregnates a female, while she is still in her pistil. Soon after the wingless male dies. The winged, gravid females emerge and leave the mammae fig through the ostiole.

# Caprifig Profichi Syconia :

- During wasp exodus season in June profichi syconia are filled with black, winged female wasps and amber, wingless males, and literally "smoke" with pollen.


1. A pollen-laden female wasp enters the syconium of an unripe fig through an opening known as the ostiole.
fig syconium (contains both male and female flowers)
2. The wasp lays eggs within some of the flowers in the syconium. In the process the insect pollinates the other female flowers.
3. Flower ovaries that contain wasp larvae form enclosing gall-like structures. The pollinated flowers without larvae produce seeds for the fig plant.
4. As the fig matures, male wasps emerge first from the galls. They then travel the syconium in search of female wasps, fertilizing them while the females are still in their galls.
5. Male flowers have matured by the time mated female wasps emerge from their galls.
6. Without ever leaving the syconium, the wingless male wasps dig escape tunnels for their mates and then die.
7. After collecting pollen from mature male flowers within the ripe fig, the mated female wasp escapes through the tunnel.
8. The female wasp, carrying pollen, flies to another fig tree in search of a syconium in which to lay her eggs. She dies within the syconium soon afterward.
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# Caprifig-type:

- The importation of Caprifigs to California in 1899 began the western Smyrna fig industry. Three to five caprifigs are grown at fig orchards for every 100 Smyrna-type fig plants, to provide the necessary pollen and fig wasps.

- Commercial growers often hang baskets of Blastophaga-infested Caprifigs in the trees of Smyrna-type figs so that the wasps can effectively fertilize the fruit. This process is often referred to as caprification.

# Some of my Favorite Varieties

**CELESTIAL**

**SYN: CELESTE**

**DESCRIPTION**

Purplish-brown skin, pink flesh. Widely adapted. Two crops per year - early summer and late summer to early fall. Very sweet.

**CONADRIA**

**SYN: ADRIATIC HYBRID**

**DESCRIPTION**

A medium to large yellow-green fig with light strawberry pulp and rich flavor. Best fig for drying.

# Some of my Favorite Varieties

**EXCEL**
**SYN: KADOTA HYBRID**

**DESCRIPTION**

A medium-sized yellow fig with amber pulp. Well-adapted in California. Superb flavor.

**FLANDERS**
**SYN: VERDONE HYBRID**

**DESCRIPTION**

A greenish-yellow, medium fig with violet stripes and amber pulp. Fine flavor. Good on the West Coast.

# Some of my Favorite Varieties

**ITALIAN EVERBEARING**

**DESCRIPTION**

Large, reddish brown skin. Flesh pink to dark red, sweet. Similar to Brown Turkey. Bears two crops through summer into fall. Prolific bearer.

**OSBORN**

**SYN: NEVERALLA**

**DESCRIPTION**

Large fruit. Produces both first and second crop figs. Purplish-bronze skin. Amber flesh, sweet flavor. Coastal areas only, avoid extreme heat. Bears well in Southern California.

# Some of my Favorite Varieties

**PANACHEE**

**SYN: PANACHE, TIGER**

**DESCRIPTION**

**A chimera which produces green fruit with yellow stripes and strawberry pulp. Can produce excellent, fresh fruit but needs sufficient heat to ripen.**

**PASQUALE**

**SYN: NATALINO, VERNINO**

**DESCRIPTION**

**A small purple fig with strawberry pulp distinguished by its late ripening--often in December or January. Fruit is sweet and rich.**

# Some of my Favorite Varieties

**PETER'S HONEY**
**SYN: ITALIAN HONEY**

**DESCRIPTION**

A medium, very sweet, lemon yellow fig. Good tree for growing in a pot. Good breba crop. Often produces a drop of nectar at the ostiole that closes the "eye"

**TENA**
**SYN: TINA, TEEM**

**DESCRIPTION**

A medium to large greenish-yellow fig with light strawberry pulp. Widely adapted, but likes hot, dry weather. Very sweet.

# Fruit Ripening

- Figs exhibit a significant size increase when they begin to ripen. This usually happens concurrently with a marked color change. The color change is most noticeable in dark colored figs.

- Ripe figs no longer exude a milky sap when picked.

# Fruit Ripening

- As a fig ripens and increases in size and weight, it will usually soften, which will cause it to droop or sag.

# Fruit Ripening

- The skin of some figs will split as they increase in size.

- Some varieties when ripe will exude a drop of honey-like nectar from the eye.

# Nutrition Value

- Figs are one of the highest plant sources of calcium and fiber.
- According to USDA data for the Mission variety, dried figs are richest in fiber, copper, manganese, magnesium, potassium, calcium, and vitamin K, relative to human needs. They have smaller amounts of many other nutrients.
- Figs have a laxative effect and contain many antioxidants.
- They are good source of flavonoids and polyphenols.

**Nutrition Facts**

Serving Size 40g/About 3-4 figs

**Amount Per Serving**

| | |
|---|---|
| **Calories** 110 | Calories from Fat 0 |
| | **% Daily Value*** |
| **Total Fat** 0g | **0%** |
| Saturated Fat 0g | **0%** |
| Trans Fat 0g | **0%** |
| **Cholesterol** 0mg | **0%** |
| **Sodium** 0mg | **0%** |
| **Potassium** 240mg | **7%** |
| **Total Carbohydrate** 26g | **9%** |
| Fiber 5g | **20%** |
| Sugars 20g | |
| **Protein** 1g | |

| | | | |
|---|---|---|---|
| Vitamin A | 0% | Vitamin C | 0% |
| Thiamin | 2% | Riboflavin | 2% |
| Folic Acid | 2% | Vitamin B6 | 6% |
| Niacin | 2% | Calcium | 6% |
| Copper | 8% | Iron | 6% |
| Magnesium | 6% | Phosphorous | 2% |
| Zinc | 2% | | |

* Percent Daily Values are based on a 2,000 calorie diet.

# Propagation

- There are many ways to propagate figs. They may be sprouted from seed, air-layered, grown from suckers , gafted or grown from rooted cuttings.
- Seeds do not produce trees that are true to type. The trees are often sterile or functionally male caprifigs.
- Air-layering requires access to a tree for 3-6 months. Air-layering a fig is easy and very successful. This method of propagation can produces a large plant in a very short period of time.
- Suckers are not always handy when you want them.
- Grafting: Cultivars may be propagated on rootstocks, or older trees, topworked by whip, cleft or crown grafting, or chip or patch budding.
- Cuttings: Fig plants are usual propagated by cuttings. The following slides are adapted from a presentation by Jon Verdick, owner of Encanto Farms.

# Propagation by Cuttings

**I would like to gratefully acknowledge Jon Verdick of Encanto Farms and We Be Figs for the following slides and instructions on propagating figs by hardwood cuttings. Thank You, Jon!**

- Cuttings can be rooted in water, in potting soil, directly in the ground, in a variety of rooting media (such as sand, vermiculite or perlite) or in a bag.
- Two things greatly improve rooting success: pre-rooting in a bag, and transplanting to a clear plastic cup containing specific media.
- Rooting is greatly speeded up when temperatures are 70F or higher. Providing a warm environment can be as simple as placing your cuttings in a bag on top of the refrigerator, or a shelf above the stove.
- The use of a rooting hormone is not necessary. Powdered hormone seems to actually encourage rotting of the cutting. Use a liquid hormone, if you use any, at all.

# Propagation by Cuttings

## Pre-rooting Cuttings

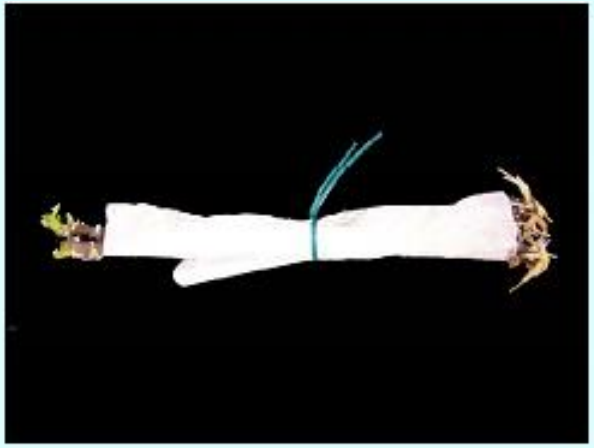
- Wrap dormant cuttings in lightly dampened paper towels or newspaper.

- Then place them in a sealed plastic bag and put them in a warm place.


- In a few weeks, you will see root initials begin to form, and then roots. Be patient; each variety is different and each cutting, even when from the same tree, can differ in its response

# Propagation by Cuttings

- Once the cuttings have formed roots they are removed from the bag for transfer to a clear cup.

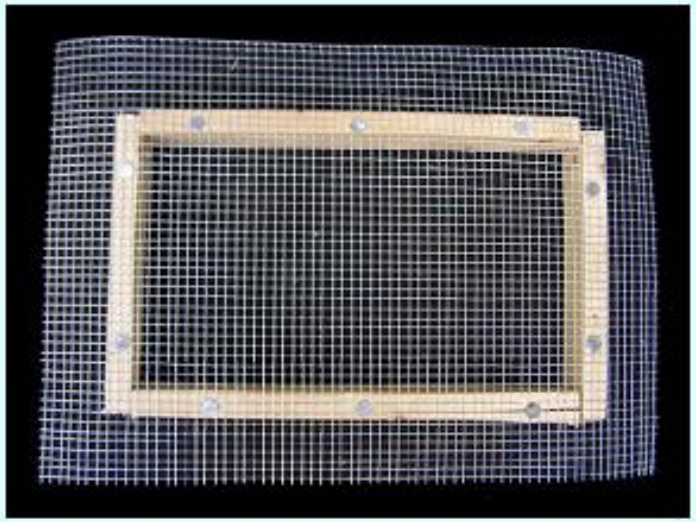


- This "bag" technique can be used on all sizes of cuttings. I have done some as large as 2" in diameter.

# Propagation by Cuttings

- The pre-rooted cuttings in clear plastic cups are placed on wire racks, in plastic storage boxes. These boxes hold 20 cuttings and can be used to control humidity.

- The screen "racks" are used to keep the cups above the water that collects at the bottom of the storage box. If the cups sit in water, the rooting media wicks up the water rotting the cuttings. But the water underneath the screen provides humidity to maintain moisture in the cutting.



# Propagation by Cuttings

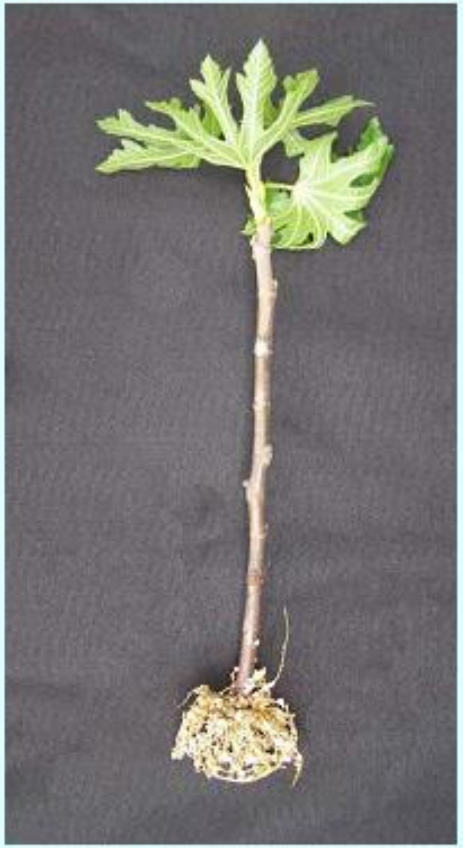
- You cannot presume root development from observing leaf development. This is why clear cups are beneficial; they allow me to actually see whether roots are developing.

- Here is a cutting that looked strong and healthy but there was little root development. This is not a good candidate for transplanting and should be kept in a very high humidity environment.

# Propagation by Cuttings

- This cutting has very vigorous root development seen through the cup as well as good leaf development.

- It is now removed from the cup and ready for repotting into a 1 gallon pot.



# Pruning

- Fig trees are productive with or without heavy pruning.
- To protect the bark of the tree from sunburn, trees are generally pruned into the modified central leader shape.
- The modified central leader shape keeps the tree smaller and makes it easier to harvest the fruit as well as to protect the fruit from birds and fig beetles.
- The size of the mature fig tree can easily be controlled by pruning without sacrificing the fruit. Fig trees can be kept as small as 6 feet in height.

# Pruning

- Fig trees can also be espallied.
- If radical pruning is done, whitewash the entire tree.

# Pruning

- Figs may produce two crops of fruit per year. The breba crop which is produced on the previous year's wood, and the main crop which forms figs on the new growth that appears this season.

Breba Crop

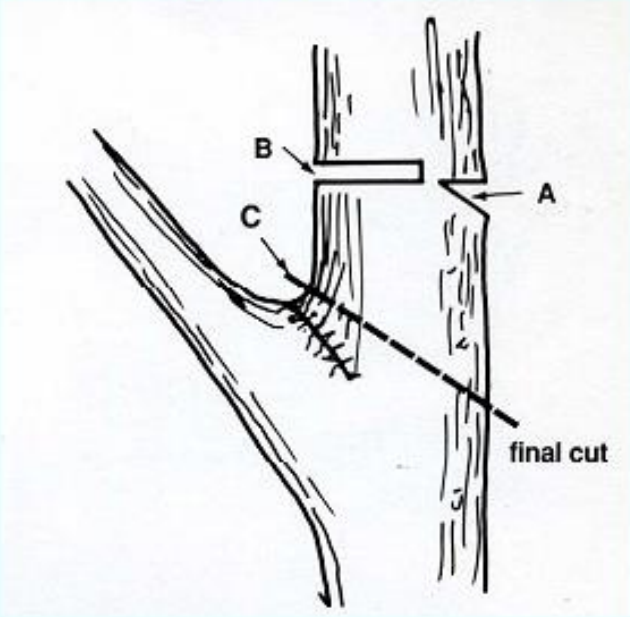
Main Crop

- Fig varieties differ in their ability to produce a breba crop. Common figs all produce a reliable main crop. Pruning must promote the correct fruiting wood for the desired crop.

# Drop Crotch Pruning

- Drop crotch pruning is to prune a branch by dropping back from the apical tip to a lower lateral branch. This lateral branch should be at least 1/3 the diameter of the branch which is being removed.

- A pruning cut is then made at the top of the collar of the lateral branch.




# Fig Tree Pruned to Modified Central Leader

## (Using Drop-crotch Pruning Techniques)

# Fig Tree Pruned to Modified Central Leader

## (Using Drop-crotch Pruning Techniques)

# Pests and Diseases
# Fig Beetles

- Fig Beetles are a problem at least as serious as birds in San Diego. 1/2" bird mesh is to large to keep out fig beetles. I found that 1/4" mesh bird net from Bird-B-Gone was the perfect solution for both birds and Fig Beetles.

# Pests and Diseases
# Fig Beetles

- Large grubs (larvae) are frequently found in compost piles and in soil that is rich in organic material.

- Traps hung in trees during the summer can help reduce Fig Beetle populations and can help to reduce damage to the fig crop.

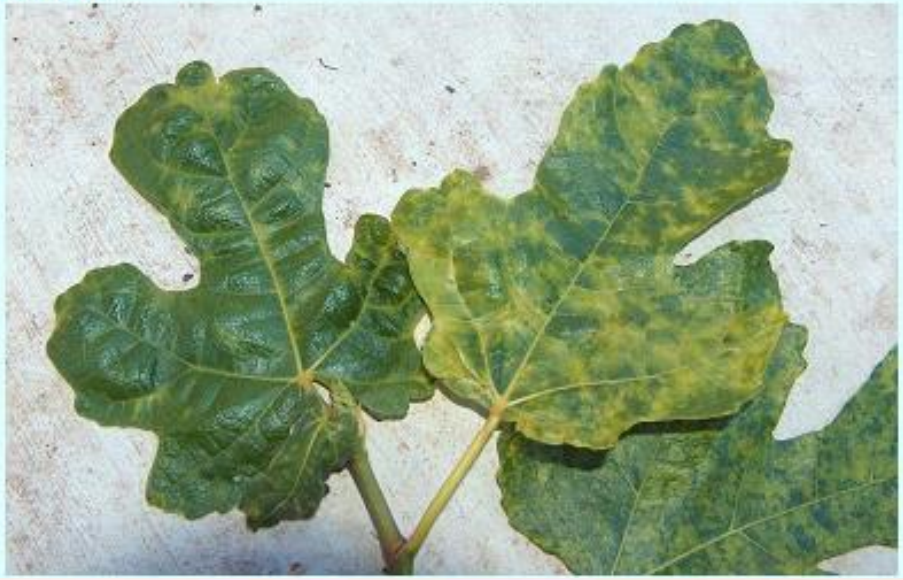
# Pests and Diseases

- Mitadulid and Carpophilus dried fruit beetles can enter ripening fruit through the eye and cause damage by introducing fungi and rots.

- They frequently breed in fallen citrus fruits. Keep a clean orchard by destroy fallen fruits and do not grow near citrus trees.

# Fig Mosaic Virus

- Host specific, only affects figs. Formerly considered benign, probably causes crop reduction.
- Symptoms resemble potassium deficiency. Leaves may be smaller than normal and deformed. Premature defoliation and fruit drop often occur.
- Virus spread by cuttings and by eriophyid mite.
- Black Mission is the most seriously damaged cultivar.
- There are no cures for virus diseases.



# Pests and Diseases
## Root Knot Nematodes

- Root knot nematodes are difficult to control and can be spread easily from garden to garden in soil (for example, on tools, boots, etc.) and plant parts.
- Root knot nematodes survive from season to season primarily as an egg in the soil. After the eggs hatch, the second stage juveniles invade roots, usually at root tips, causing some of the root cells to enlarge where the nematodes feed and develop.
- Root knot nematodes usually cause distinctive swellings, called galls, on the roots of affected plants.
- The nematodes feed and develop within the galls, which may grow to as large as 1-inch in diameter on some plants but are usually much smaller.


# Root Knot Nematodes

- Above ground symptoms of a root knot nematode infestation include wilting, loss of vigor, yellowing, and other symptoms similar to a lack of water or nutrients.
- Fewer and smaller leaves and fruits are produced, and plants heavily infested early in the season may die.
- Damage is most serious in warm, irrigated, sandy soils.
- **Some control** may be achieved by using fruit tree rootstocks that are resistant to nematode injury, increasing the organic material in the soil with the use of mulches or soil amendments, or by introducing beneficial *Steinernema feltiae* (Sf) nematodes.