Persimmon (*Diospyros kaki*)

Oriental Persimmon, Japanese Persimmon or Kaki Persimmon


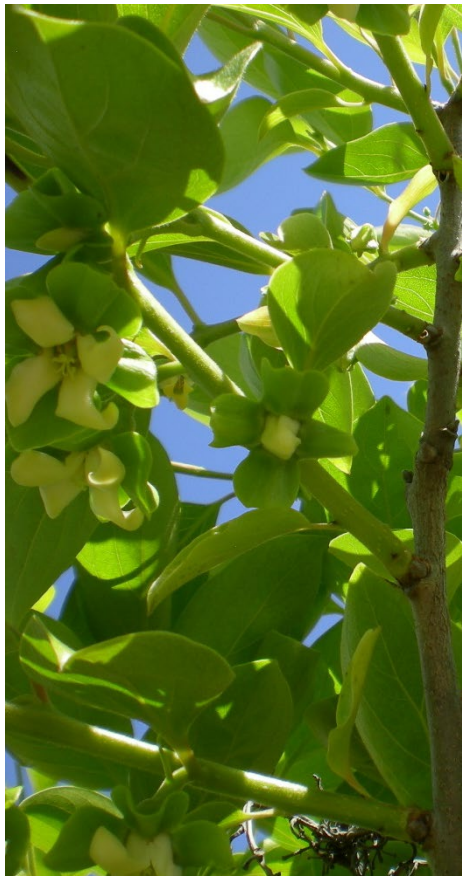

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Photo: Rosa Hernandorena https://www.hernandorena.com

Persimmon

- Moderate to high commercial potential
- Direct-to-consumer potential, $1.50 - $3.00/fruit
- Good potential for direct marketing and possibly exports (e.g., Canada)
- Value-added – baked goods (cookies, cakes, etc.), custards, ice cream, preserves, puddings, etc.

Photo: Ali Sarkhosh

Varieties

Classification

-Astringent: A taste that puckers the mouth, numbs the tongue, and constricts the throat. This taste is caused by astringent substances such as tannins. Fruit can be eaten when are soft.

-Non-astringent: Fruit lose astringency while still hard. Fruit can be eaten when are hard or soft.

Resource: Japanese Persimmon Cultivars in Florida
https://edis.ifas.ufl.edu/pdf/MG/MG24200.pdf

Photo: Rosa Hernandorena https://www.hernandorena.com and Ali Sarkhosh

Varieties

Fruit shape (oblate, flat, cone)

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Photo: Rosa Hernandorena https://www.hernandorena.com

Varieties

What variety and how many different varieties should I plant?

Non-astringent: ‘Izu’, early season; ‘Jiro’ and ‘Matsumoto Wase Fuyu’, mid-season; and ‘Fuyu’, late season.

Astringent: ‘Nishumura Wase’, ‘Saijo’, ‘Tanenashi’, ‘Yamato Hyakume’, ‘Sheng’, ‘Ormond’, ‘Hachiya’, etc.

Resource: Japanese Persimmon Cultivars in Florida

https://edis.ifas.ufl.edu/pdf/MG/MG24200.pdf

Photo: Ali Sarkhosh

‘Fuyu’

- Fruit size is medium
- Soluble solids average 18%
- Fruit shape is oblate/flat
- Harvest season is late October thru November

Resource: Japanese Persimmon Cultivars in Florida
https://edis.ifas.ufl.edu/pdf/MG/MG24200.pdf

Photo: Ali Sarkhosh

‘Jiro’

- Fruit size is medium-large
- Soluble solids average 17%
- Fruit shape is oblate/flat
- Harvest season is late September thru mid-November

Resource: Japanese Persimmon Cultivars in Florida
https://edis.ifas.ufl.edu/pdf/MG/MG24200.pdf

Photo: Edible Landscaping LLC

‘Matsumoto Wase Fuyu’

- Produces heavy clustered crops
- Soluble solids average 17%
- Fruit are medium in size and oblate in shape.

Resource: Japanese Persimmon Cultivars in Florida
https://edis.ifas.ufl.edu/pdf/MG/MG24200.pdf

Photo: Edible Landscaping LLC

‘Hachiya’

- Fruit size is medium-large
- Soluble solids average 17% to 19%
- Remains astringent until fully ripened and soft
- Mostly used for drying in Japan

Resource: Japanese Persimmon Cultivars in Florida
https://edis.ifas.ufl.edu/pdf/MG/MG24200.pdf

Photo: Ali Sarkhosh

‘Tanenashi’

- Fruit size is large
- Soluble solids average 16%
- Remains astringent until fully ripened and soft
- Harvest from September through November.
- It is a good tree for homeowners

https://edis.ifas.ufl.edu/pdf/MG/MG24200.pdf

Photo: Ali Sarkhosh

Rootstock

- American persimmon*, D. virginiana,* is the recommended rootstock for southern states due to its adaptability to different soil types

Resource: Japanese Persimmon Cultural Practices in Florida
https://edis.ifas.ufl.edu/pdf/HS/HS138900.pdf

Photo: Rosa Hernandorena https://www.hernandorena.com

Soil

- Wide range of soil types
- Deep well-drained soil (pH 6-7)
- Sensitive to salinity

Photo: Rosa Hernandorena https://www.hernandorena.com

Planting

- Bare-root trees from December through February
- Pot trees anytime during the year, March to May - the best time

Photo: Rosa Hernandorena https://www.hernandorena.com

Tree Spacing

- 15 ft (4.5 m) between trees and 18 to 20 ft (6 m) between rows

Photo: Rosa Hernandorena https://www.hernandorena.com

Irrigation and Fertilizer

- Frequent irrigation (2 to 4 times per week) is required after planting
- Fertilization plan with 3 applications is recommended, with 50% applied in March and 25% each in June and August
- N-P-K, 12-4-8 plus trace elements
- 1lb/tree in the first year; add 0.75lb to the amount of the year before

Photo: Ali Sarkhosh

Table 1. Application time and amount (lb) of 10-10-10 with micronutrients.

Year	March (dormant)	June	September	Total applied
1	0.5	0.25	0.25	1
2	0.875	0.4375	0.4375	1.75
3	1.25	0.625	0.625	2.5
4	1.625	0.8125	0.8125	3.25
5	2	1	1	4
6	2.375	1.1875	1.1875	4.75
7	2.75	1.375	1.375	5.5
8	3.125	1.5625	1.5625	6.25
9	3.5	1.75	1.75	7
10	3.875	1.9375	1.9375	7.75

Table 2. Leaf nutrient ranges of high-yielding persimmon trees in Japan.

Element	Leaf tissue concentration (%)	Role in the tree
Nitrogen	2.22–3.15	Increase flower production
Phosphorus	0.11–0.16	Enhance fruit color, root development
Potassium	1.47–3.86	Promote shoot growth, fruit weight, water regulation
Calcium	0.92–2.78	Prevent shoot deformities, improve shelf life
Magnesium	0.22–0.77	Production of seed, phosphorus transport

Training

- Modified Central Leader
- Open-center or Vase
- Palmette

The goal is to have 4-6 well-spaced branches radiating from the trunk

Resource: Japanese Persimmon Cultural Practices in Florida
https://edis.ifas.ufl.edu/pdf/HS/HS138900.pdf

Photo: Rosa Hernandorena https://www.hernandorena.com and Ali Sarkhosh

Pruning

- When the main structural branches are in place, some are lightly pruned and tipped each season to stimulate more branching, while others are left unpruned

Resource: Japanese Persimmon Cultural Practices in Florida
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Photo: Rosa Hernandorena https://www.hernandorena.com

Flowering

- On current season's growth several weeks after vegetative bud break

Photo: Rosa Hernandorena https://www.hernandorena.com

Flowering – Pollination

- Persimmons can set modest crops parthenocarpically (without fertilization)

Photo: Ali Sarkhosh

Fruit

Photo: Rosa Hernandorena https://www.hernandorena.com and UF/IFAS

Harvest and Postharvest

- Varies by variety - from September through December
- Firm, beginning in the yellow/orange phase through full color
- Clip the fruit from the tree to prevent damage to the fruit
- Shelf life can be prolonged to 2 months in 32 °F storage, and up to 6 months in controlled atmosphere conditions

Photo: Rosa Hernandorena https://www.hernandorena.com and Ali Sarkhosh

Fruit Drop

- Previous season crop load
- Pollination
- Water and nutrient excesses
- Lack of light infiltration into the canopy

Photo: Rosa Hernandorena https://www.hernandorena.com and UF/IFAS

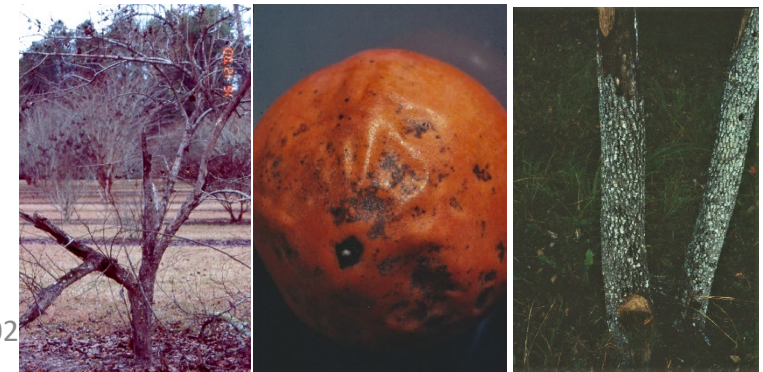
Diseases

- **Botryosphaeria canker**
- **Leaf and fruit spots** *(Cercospora, Alternaria, Gloeosporium)*
- **Persimmon wilt** *(Cephalosporium diospyri)*

Insect Pests

- **Scales**
- **Persimmon psylla**
- **Stinkbugs**
- **Tree borers**
- **Twig girdler**
- **Thrips**
- **Caterpillars**

Resource: Japanese Persimmon Cultural Practices in Florida
https://edis.ifas.ufl.edu/pdf/HS/HS138900.pdf



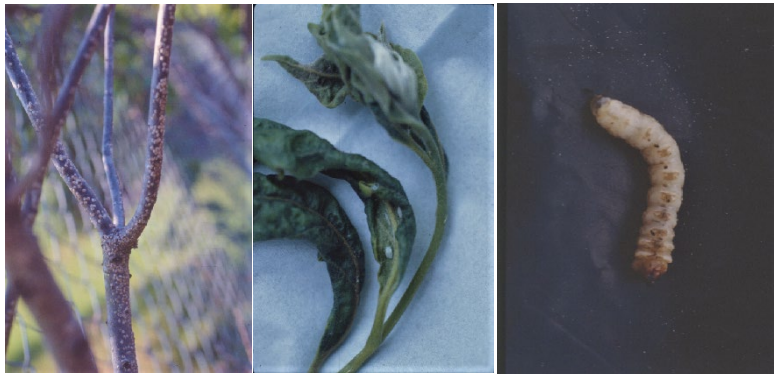


Table 3. Major insect pests of Japanese persimmons in Florida.

Insect Pests	Symptoms	Control
Scale (Figures 9, 10) primarily white peach scale (*Pseudaulacaspis pentagona*)	Snow-white patches on trunk and limbs, easily scraped off. Most visible when males emerge during warm weather.	3% dormant oil applied before bud break, summer oil, or two pesticide applications 1–2 weeks apart (imidacloprid, MOA 4A, such as Provado 1.6F; potassium salt such as Safer soap; or Scalecide); ladybird beetles and lacewings for biological control.
Persimmon psylla (Figures 11, 12) (*Trioza diospyri*)	Crinkled and deformed young leaves, stunted growth. White-colored nymphs found within distorted leaves and black-bodied adults on leaf surface. Mealy bugs may also be present.	Best to control very early; sprays less effective when leaves curl. Many pesticide options. May also need to control the ants that feed on the honeydew.
Twig girdler (*Oncideres cingulata*)	Girdled limbs present on trees or that have broken and fallen to the ground with leaves attached. Twig girdler may also transmit wilt disease.	Girdled limbs removed to prevent pest buildup. Best to apply preventative spray in fall, when egg laying occurs. Pyrethroids, MOA 3A, such as Pyrenone Crop Spray.
Tree borers (Figures 13, 14) (multiple species, including *Sannina uroceriformis*)	Gummy sap, frass, or sawdust coming from small holes in bark, pruning cuts, or trunk near soil line.	March through June applications best to prevent larvae from entering tree. Limited direct control information; controls for peachtree borer may be effective (imidacloprid).
Stink bugs (Figure 15) (multiple in family Pentatomidae)	Damage shows up as off-white sections of fruit during color development, and areas may decay. Only an issue on nonastringent cultivars.	Certain life stages may be parasitized by wasps or flies for biological control. Chemical control: Pyrethroids, MOA 3A, such as Pyrenone Crop Spray.
Thrips (multiple species)	Fruit may be affected in south Florida. Thrips are often seen around fruit set and flowering and may cause fruit deformities.	Sprays best around early fruit development (Bonide Rotenone/Pyrethrin, Pyrellin, Pyrenone Crop Spray).
Caterpillars (*Malacosoma disstria*) **Scarab beetles** (*Phyllophaga* spp.)	Forest tent caterpillar and scarab beetles can feed on leaves early in the season. Fall webworms can also impact the later season.	Appropriate timing of sprays in spring and fall when present.

Table 4. Major diseases of Japanese persimmons in Florida.

Diseases	Symptoms	Control
Botryosphaeria canker (Figure 23) (*Botryosphaeria dothidea*, *B. rhodinina*, *B. obtusa*, and *B. ribis*)	Discoloration of wood and deep, elongated bark scars may be present. This disease is the limiting factor for growing persimmons in Florida and the Deep South. Often this fungus limits the lifetime of Japanese persimmons to about 8 to 12 years (or less).	There is no good chemical control. Pruning to wide crotch angles, pruning during dry days, disinfecting tools, maintaining good airflow in the canopy, reducing water or nutrient stress to trees, and a good fungicide program are recommended to help reduce the incidence of this fungus.
Leaf and fruit spots (Figure 16–21) (*Cercospora* spp., *Alternaria* spp., *Gloeosporium* spp., *Phyllosticta* spp., *Botrytis cinerea*, *Pseudomonas syringae*, *Colletotrichum* sp., *Ramularia* sp.)	*Cercospora*: leaf spots and early defoliation. *Gloeosporium*: anthracnose "bitter rot" that affects fruit and shoots. *Colletotrichum*: affects ripening fruit. *Ramularia*: leaf spots sometimes in mid-season. *Botrytis*: brown leaf patches. *Pseudomonas*: "bacterial blast" leaf spots and blackened stem and leaf petioles.	Proactive fungicide sprays in early season, and cover sprays in summer in rotation.
Persimmon wilt (Figure 22) (*Cephalosporium diospyri*)	*D. virginiana* rootstock is susceptible to this disease; *D. kaki* and *D. lotus* are immune. If the *D. kaki* scion is carrying the pathogen, it can move into the native rootstock and kill the tree. Symptoms include wilting and tree top death.	Use clean scion material when propagating, remove infected plants quickly, and sanitize pruning tools between trees.
Phomopsis* spp., *Verticillium albo-atrum*, *Botryosphaeria dothidea (Figures 23, 24)	May cause small leaves and fruit, and terminal twigs that are leafless. May also cause wilting, shoot decline, and bark cracking at limb joints.	

Challenges for Persimmon Production

- Low demand for astringent types
- *Botryosphaeria* is the major limitation
- Marketing and consumer education
- Risk of production due to fruiting season/competition from other states

Resources

- **Japanese Persimmon Cultural Practices in Florida**
  https://edis.ifas.ufl.edu/pdf/HS/HS138900.pdf

- **Japanese Persimmon Cultivars in Florida**
  https://edis.ifas.ufl.edu/pdf/MG/MG24200.pdf

- **Sustainability Assessment of Fruit and Nut Crops in North Florida and North Central Florida**
  https://edis.ifas.ufl.edu/publication/MG367

- **UF Fruit Crops Diversification**
  https://hos.ifas.ufl.edu/fruitcropsdiversification/

UF/IFAS EDIS Publication

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UF Fruit Crops Lab

“I cannot do all the good that the world needs. But the world needs all the good that I can do.”- Jana Stanfield

Thank You!!

Photo: Rosa Hernandorena https://www.hernandorena.com