



High Density Olive Orchards

Provided by The Burchell Nursery, Inc.

As early as 3000 BC the olive tree, *Olea europaea*, has been a part of Mediterranean civilization. The use of olives, olive oil and its cultivation is referenced numerous times in the bible making it one of the oldest cultivated fruit trees.

By the fifth century BC the Romans were familiar with the uses of olive products and its cultivation. Today, most of the world's olives are still grown in the Mediterranean region. The olive tree is best suited to areas with a long, hot growing season and a relatively cool winter with minimum temperatures above a lethal limit.

Spain is the world leader in olive oil production and olive trees planted. Recently a Spanish company has begun an olive oil production facility in Butte County, California. Bringing their high density planting styles and highly productive olive varieties, California Olive Ranch (COR) was begun in 1999. A total of 733 acres was developed to produce high quality California extra-virgin olive oil. With the high density olive plantings in place COR began harvesting the highly productive Arbequina and Arbosana varieties in 2001.

The high-density orchard configuration suits the Arbequina and the Arbosana varieties well. These varieties have been bred for high yields and low vigor. This also allows the varieties to be mechanically harvested with typical grape harvesters.

High-Density Olive Varieties

Arbequina Standard– More than 100 olive varieties have been tested for high-density systems and Arbequina is one of the best fits. The variety is very precocious and will begin bearing in the second year. The fruit is small and the oil quality is excellent. The tree vigor is low which makes it a perfect fit for a high-density system. The variety is tolerant to leaf spot, verticillium and is resistant to cold temperatures. It is susceptible to iron induced chlorosis in calcareous soils.

Arbequina IRTA® i-18 – This is a clonal selection of the Arbequina Standard. The i-18 clone has a more erect growing habit and higher yield efficiency than the Arbequina Standard. It has a heavier initial bearing habit, more uniform ripening and a generally higher overall production.

Arbosana IRTA® i-43 – The variety has low vigor and high productivity. It has an open growth habit as compared to the Arbequina Standard. The fruit is small and the oil quality is good. It is tolerant to verticillium but susceptible to leaf spot and iron-induced chlorosis.

Koroneiki IRTA® i-38 – This is a Greek variety originally cultivated on the plains, lower hillsides and coastal areas of Crete where the climate is relatively warm. It adapts well in high-density orchards and comes into production early (second leaf). The fruit is very small with excellent oil quality that expresses a sweet and fruity flavor. The yield is high and production is consistent year to year. Harvest time is approximately the second week of October.

Advantages of High Density

- **Faster Production** – Initial harvest is the second year after planting. Depending on soil and climate factors the third and fourth year crops are heavy with full cropping in the fifth year.
- **Mechanical Harvesting** – Growers are always looking for ways to have more efficient, less costly harvests. With high-density olive orchards fast, efficient harvests can become a reality by using over-the-row grape harvesters. This will almost eliminate expensive hand labor.
- **Bigger Yields, Quicker Payback** – More trees per acre means more production per acre. Yields can reach 4-6 tons per acre in mature orchards. Olive oil yields of 40 gallons per ton of olives can be expected.
- **Well suited to existing planting layouts** – With olive plants spaced typically 12 to 15 feet between the rows and 4 to 6 feet between the plants they fit well into existing grape vineyard spacing.
- **Quality Olive Varieties** – These are the premiere varieties from the world's leader of olive oil. The specially selected Arbequina, Arbosana and Koroneiki not only have the compact growth habit for high density they have the quality of oil that makes them a premier extra virgin olive oil product.

Spacing Planting and Harvesting

Typical spacing of the Arbequina, Arbosana and Koroneiki varieties is 10-12 feet between the rows and 4-6 feet between the trees. Below is a chart that describes trees per acre at typical spacing.

TREE SPACING - Distance between trees within a row

ROW SPACING -
Distance between rows

	4'	5'	6'	7'	8'	9'	10'	11'	12'
8'	1361	1089	908	778	681	605	545	495	454
10'	1089	871	726	622	545	484	436	396	363
11'	990	792	660	566	495	440	396	360	330
12'	908	726	605	519	454	403	363	330	303
13'	837	670	558	479	419	372	335	304	279
14'	778	622	519	444	389	346	311	283	259
15'	726	581	484	415	363	323	290	264	242

Planting – Olives are semi-deciduous so they can be planting during most months of the year. The plants are produced in small pots for easy transplanting to the field. Once the ground is ready and the irrigation system is installed olives can be planted.

Pruning- Varieties used in high-density olive orchards are pruned to a central leader. A bamboo, wooden stake or metal pole must support the plant because of the low vigor and high productivity. The tree stakes are supported by a one-wire trellis system with end poles and metal stakes spaced for support of the wire down the row. The trees are not headed when planted and are allowed to grow up the stakes in a central leader fashion. The tree canopy is kept to about two feet above the orchard floor and topped to a level of 7 feet.

Harvesting – A typical two-man grape harvester can be use to effectively harvest 1 to 1.5 acres per hour. Currently, California Olive Ranch in Butte County is building a processing facility to process and bottle the olives delivered to them. COR plans on contracting with other growers wishing to have their olives processed and marketed by COR.

To learn more about high-density olive orchards or place orders please contact one of our Field Representatives.

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All of the olive plants are produced by Burchell Nursery in Fresno, California.
The Burchell Nursery is an authorized selling agent of IRTA olive plants.