

Pistachios

Mature pistachio trees are moderately heavy users of nitrogen. Under most Arizona conditions 125 to 150 lbs. N per acre are required in heavy fruiting years and about 50 to 75 lbs. N per acre in the off years.

The pronounced alternate bearing cycles observed in pistachios have the greatest influence on the optimum N fertilizer rate to use. Observations of nut set, annual shoot growth and the size and color of leaves are helpful in monitoring the N needs of an orchard.

- **Young trees**

Adequate supplies of N are needed to promote rapid growth and development of young nonbearing trees. Generally one-third of a pound of actual N should be applied annually per inch of trunk diameter. Excessive applications of N to younger trees can delay the initiation of nut production.

- **Mature orchards**

Pistachio trees require a constant supply of N throughout the growing season. Approximately 10 lbs. N is required for each 100 lbs. of expected nut yield. For example, 150 lbs. N would be required for an expected yield of 1500 lbs. of nuts per acre. Mature pistachio trees should put on 18 to 24 inches of shoot growth in “off” years and 8 to 12 inches in “on” years.

Determination of the N concentration in leaves from the current season growth can also be useful in estimating tree N status. Samples should be collected between July 15 and August 15 from leaves which are free of insect, disease or mechanical damage. Collect the middle pair of leaflets from leaves from the middle of the current season growth (Figure 50). Sample about 100 pairs of leaflets from randomly selected trees within the block to be tested. Samples should be placed in a paper bag and dried at about 150°F (65°C) or refrigerated as soon as possible and submitted to a laboratory for total N analysis.

The total N content in pistachio leaflets should be maintained between 2.3 and 2.7% if possible, but above the critical level of 2.1%.

- **Timing of N applications**

Apply N in 4 to 6 roughly equal amounts beginning in the spring when shoot growth resumes. Make the last application on about August 1. More



Figure 50. Collect leaf tissue samples between July 15 and August 15 for nutrient analysis. Sample the middle pair of leaflets from leaves from the middle of the current season growth (above).

frequent, lighter applications are recommended on very sandy soils.

- **Importance of forms of N**

Ammonium (NH₄) forms of N such as anhydrous and aqua ammonia or ammonium sulfate will become available for plant uptake with the second irrigation following application. Nitrate and urea forms of N are available after the first irrigation. Caution should be used when applying anhydrous and aqua ammonia to avoid plant injury from ammonia toxicity, especially on very sandy soils.

- **Methods of application**

Nitrogen should be applied directly in the irrigation water or else placed such that water movement will carry soluble N into the root zone. Solutions of ammonium sulfate, ammonium nitrate, calcium nitrate, and urea can be injected into both surface and pressurized irrigation systems. Anhydrous ammonia or aqua ammonia should be used with nonpressurized, surface irrigation systems only. The uniformity of N applied with the irrigation water will only be as good as the uniformity of water applications.

Dry N fertilizers can be applied in spots or bands at the drip line of trees and incorporated below the soil surface either mechanically or with a surface irrigation. Incorporation is especially important to reduce volatilization of ammonium forms of N.

- **Nutrient removal**

A harvest of 1500 lbs. of pistachio nuts per acre will contain about 40 lbs. N.