Optimising Olive Tree Growth and Nutrition to Maximise Olive Production

Dr. D. Mathur, Product Chemist and Plant Physiologist

Olive industry is perhaps the youngest developing horticultural industry in Australia. Olives originated in the Mediterranean environment, and most parts of Australia have ideal climate and soil to grow a profitable crop. Since olives and olive oil are an international commodity, it is the aim of every grower to get the best out of their olive trees. Growers must understand that proper nutrient management of olive trees apart from varietal selection, planting density, irrigation scheduling and soil physical and biological properties is crucial to get a high yielding quality crop.

Olives will grow in most soil types as long as they are well drained and have a subsoil pH range of 6.5-8.5. Tree spacing is generally around 250-300 trees/ha to optimise yield and light penetration down the crop canopy. High density planting in olives is still in the experimental phase, require more intense nutrients management to meet the demand of the growing trees. The growers must, therefore, carefully plan their nutrient program according to the plant population of their grove.

Although olive trees are hardy, to yield well they require the same high level of management as other commercial horticultural crops, especially in their first few years of growth. Olives respond well to fertilisers, provided a correct balance of NPK with trace elements is applied according to the planting density. Half of the fertiliser is generally applied during autumn and the other half during spring. These soil-applied fertilisers can sustain the trees but cannot provide optimum nutrition to the developing fruits in later stages of growth. Hence growers must supplement nutrients through a carefully planned foliar nutrition program especially pre, post- flowering and fruiting stages of growth.

- **BASE (15-18-20),** a high analysis liquid formulation with a complete package of micronutrients and humic acids should be fertigated @ 30-40L/ha during autumn to sustain the tree growth and @ 50-60L/ha during spring. The continuous use of Base will build up your soil physical, biological and chemical properties, and soil nitrogen and potassium reserves. The trace elements are fully chelated for optimum availability under slightly acidic and alkaline soil pH. The rates should be adjusted with the age of the grove, young trees require low rates compared to productive old trees. BASE is not designed for foliar application. Use it in place of dry granules that require water to solubilize their nutrients in soil.

Firmrite CMB (15-0-0, 22% Ca, 3%Mg, 0.1%B), a versatile foliar fertilizer to apply calcium, magnesium and boron along with nitrogen, must be incorporated in the fertilizer program from early spring season. One application early spring and another a week prior to flowering @ 3-4L/ha will provide enough nutrients to sustain growth and further development of the new shoots. Calcium provides rigidity to the newly layed cell walls, and maintains the integrity of the plasma membrane. Magnesium helps in biosynthesis of green pigment, called chlorophyll to capture and convert solar energy into plant food, which will be required in early stages of fruit development. Boron helps in calcium metabolism and fertilization process, however, excess boron can be detrimental to young developing shoots.

Boron 15 is an easy to handle liquid used as a foliar spray, which can be mixed with **FIRMRITE CMB**. Boron helps in sugar translocation, calcium metabolism and

fertilization process. **Boron 15** is a sodium free liquid formulation of plant recognisable boric acid fortified with amines and sugars for efficient uptake and translocation of Boron. The uptake efficiency of **Boron 15** is higher than dry soluble powders because:

- Boron 15 is formulated with the help of two additional components, amine nitrogen and sugars. Amines have excellent wetting ability and penetration power into the leaves, enabling better boron movement to the growing points to exert its effect.
- The sugars incorporated into the Boron 15 also help boron movement into the plant. Most of the boron moves primarily through the phloem elements along with sugars and/or sugar alcohols such as mannitol and sorbitol.
- The foliar application rate of Boron 15 varies from 0.5 to 1 L/ha; less boron is applied than with the dry soluble powders, because of its greater uptake and translocation rates.
- Boron 15 is easy to handle and is completely miscible with water and applied as a foliar, and is also be fertigated, especially in light sandy soils.
- Two applications of **FIRMRITE CMB** at 3-4L/ha mixed with 0.5 L/ha **Boron 15** at post-flowering and fruiting stages of growth will result in firmer fruit.

Boron is most critical during fruit development phase as its deficiency leads to soft nose rot, especially in Kalamata and Volos varieties

- **Smartrace Zinc (10% Zn),** zinc should be applied early in the season to promote biosynthesis of plant's own hormone and photosynthesis. Apply Smartrace Zinc @ 2-3L/ha early in the season and another post-flowering @ 2-4L/ha.

- **PICK 15:42 (0-15-42),** a high analysis phosphorus and potassium liquid fertilizer to boost plant's phosphorus and potassium levels at critical stages of growth. Spray PICK 15:42 @ 3-4L/ha a week before flowering. Oil biosynthesis/accumulation in olives starts from the very early stages of fruit development. Limitation of phosphorus in such high-energy environment will reduce oil production. Apply PICK 15:42 @ 3-5L/ha starting at beginning of fruit formation until fruits are reddish at fortnightly interval. A regular supply of potassium will prevent premature fruit senescence and helps the fruit to attain their full potential size.

- **Smartrace Spraytrace 8,** a fully balanced blend of trace elements must be used regularly in your fertilizer program. Apply @ 3-5L/ha during mid to late spring, post-flowering, and mid to late stages of fruit growth. Post-harvest application @ 4-6L/ha is also suggested to replenish micronutrients in trees and minimise stress related disorders.

It is highly recommended that the water-stressed trees should not be sprayed with any fertiliser. Irrigate your crop and give sometime to recover from stress then apply nutrients through the foliage.