

## **ALTERNATE BEARING: PRACTICAL METHODS TO REGULATE GROWTH AND CROPPING OF OLIVES IN SOUTH AFRICA**

It is important to prevent young trees from entering the notorious vicious cycle by regulating crop load and vigour at the earliest stage. To optimise crop load we need to give attention to all of the following aspects with an integrated approach:

### **Nutrition**

Ensure that nutrient application is done judiciously according to recommendations based on annual leaf analysis and soil analysis carried out at least once every three years. In problem cases these analyses can be done more frequently.

Leaf analysis norms are currently applicable for January sampling, but research is ongoing to refine and extend these norms.

Keep nitrogen levels within the limits as excessive N application will stimulate vegetative development, resulting in excessive vigour, shading and eventual unfruitfulness or, on the other hand, formation of excess bearing shoots and eventual excessive crop loads. Smaller doses applied more frequently are recommended rather than fewer heavy applications which tend to stimulate strong growth flushes. Growth flush at the end of the growing season should average around 25 to 30 cm. More growth than this is asking for trouble.

Potassium is necessary, amongst other things, for the switch to floral differentiation so K needs to be at optimum levels already in late autumn. Fruit utilises much of the K, so ensure that fruit is harvested as soon as possible. Late harvested fruit has low oil quality and poor texture. Ensure that K is replaced without disturbing the nutrient balance. Do this by frequent smaller applications rather than one or two heavy doses. Excessive K application can hinder uptake of other elements such as Ca and Mg, hence the need for regular soil analysis.

Boron is essential for normal floral and pollen development. Soil analysis will not help at all unless the recommendations made by a reputable laboratory are followed accurately and timeously.

### **Irrigation**

Correct irrigation scheduling is critical to obtain the balanced growth necessary for optimising crop loads. An olive tree can survive drought, but will not bear regular crops under poor irrigation regimes.

Excessive irrigation promotes asphyxia, poor root performance, death of fine root hairs and exposes trees to infection by root pathogens. Healthy active fine roots are not only necessary for water and nutrient uptake, but also for the synthesis of growth regulators necessary to ensure consistent high yields of good quality fruit.

Sufficient shoot development, which is necessary to form the next season's fruit bearing wood, requires an adequate supply of nutrients and water. Most shoot growth occurs before flowering. Developing fruitlets are stronger sinks (priority metabolic attraction centres) than shoots and so, on the same branch, fruit development will be favoured at cost to shoot development. That is why hardly any shoot growth occurs when a tree is bearing a reasonable crop under dryland conditions.

There are many effective tools available today to monitor soil moisture levels but even a simple spade can help to determine the status of the roots and available soil moisture.

More sophisticated irrigation techniques, such as short periods of Regulated Deficit Irrigation or Partial Rootzone Drying at critical times, which is nowadays possible with the help of computer programmes and real-time soil moisture monitoring equipment, can be used to restrict vigour and induce reproductive development. This technology will become more important in future as ground-water pollution threatens to become a serious problem and land and water resources become scarcer.

## **Pruning**

Pruning must be done to maintain the balance between fruit, leaves and wood, with thinning out preferred to heading or topping. Thinning out of short and medium length shoots (which carry a heavy crop) will allow the nutrients and photosynthate to be channelled into the numerous remaining shoots carrying developing fruitlets, resulting in controlled growth. On the other hand, a heading cut will result in stimulation of growth at a localised site resulting in excessive vigour at this site.

The best time to prune is in Spring when the floral development becomes evident, so that one can judge the potential crop on the tree and decide accordingly as to how much fruit to remove relative to leaves. Pruning up to the time of fruit set will allow the remaining fruit as well as future bearer shoots to benefit from the action.

Pruning must always allow good light distribution over the remaining branches to ensure balanced fruit and shoot development with healthy leaves. Exhausted shoots showing little active growth should be completely removed, while a balance between long vegetative shoots and short fertile shoots should be maintained with renewal and thinning out done where necessary. Vigorous shoots can be headed back to sylleptic laterals.

No exact information is currently available on how to regulate the optimum crop load of each cultivar or the degree of fruit removal necessary, since this will be influenced by the specific growing conditions. Growers should initially aim to obtain the average of their on-year and off-year yields [8 to 10 tons/ha with 400 trees/ha = 20 to 25 kg/tree is a fair guideline]

## **Pest & Disease Control**

Pest and disease control must be carried out timeously and effectively since each lateral bud needs a healthy leaf to develop properly and each fruitlet needs a certain number of functioning leaves to develop. Even mild infections of Olive Leaf Spot and Anthracnose result in leaf loss, Olive Beetle and Tingid damage the leaves while other pests and diseases parasitise the trees, reducing the photosynthate available for regular growth and fruiting.

**CARLO COSTA**