

The size response is also reflected in chemical thinning studies, which show that loquat fruit enlargement depends on both treatment efficacy and developmental timing. Application of naphthaleneacetic acid at 20 mg L⁻¹ about 10-15 days after anthesis was reported as the most effective treatment for thinning and increasing average fruit size, while NAAm applied at the end of bloom increased fruit diameter by an average of 11% to 18% depending on dose. This response is biologically plausible because loquat fruit weight is tightly associated with fruit dimensions across genotypes, and larger fruits are consistently favored by the market (Kodad et al., 2022).

3.2 Effects of fruit thinning on yield per unit area and yield components

The effect of fruit thinning on yield per unit area is more complex than its effect on fruit size, because thinning usually reduces fruit number while improving the marketable proportion of the crop. In loquat, the highest cluster weight and total yield were obtained under the lightest thinning treatment, with 12 buds retained per cluster, even though fruit quality was better at lower bud numbers. Similarly, chemical thinning with high NAA doses produced the largest fruit but also the lowest yield per tree, showing that excessive crop reduction can shift the balance too far from yield formation toward fruit enlargement.

From the perspective of yield components, fruit thinning mainly acts by changing fruit set, fruit number per panicle or tree, and average fruit mass. In ‘Precoce de Itaquera’, fruit set was significantly influenced by thinning intensity, while in ‘Algerie’ loquat heavier thinning slightly improved packout but did not compensate for the substantial yield loss caused by reducing fruit number per panicle. More broadly, yield per unit area in fruit crops is the product of yield per plant and plant number, so in loquat orchards the contribution of thinning to area-based productivity depends on whether gains in fruit mass and market grade can offset the decline in fruit number per tree (Haque and Sakimin, 2022).

3.3 Effects of thinning timing and intensity on yield regulation

The regulatory effects of thinning depend strongly on when thinning is performed and how severe it is. Loquat is usually hand-thinned relatively late, but this has been described as expensive and of limited usefulness because late execution reduces the opportunity to redirect resources during early fruit development. By contrast, chemical thinning at the end of bloom or shortly after anthesis appears more effective for regulating crop load early enough to improve fruit growth, and treatment date was explicitly identified as a determinant of thinning efficacy in loquat. In practice, this means that timing is not a minor technical detail but a central variable controlling the final balance between fruit number and fruit size.

Thinning intensity also has to be optimized rather than maximized. In loquat under deficit irrigation, reducing crop load to one, two, or three fruits per panicle did not generate enough value to compensate for the associated yield loss, and four fruits per panicle gave the highest revenue. Comparable evidence from other fruit crops points in the same direction: low crop loads generally produce heavier fruit, but very high or very low thinning intensity can destabilize yield, whereas medium crop loads often provide the best compromise between size and production consistency (Sidhu et al., 2022). Overall, yield regulation in loquat should therefore target an optimal crop load, not the strongest possible thinning, with timing and severity adjusted to cultivar, orchard conditions, and market objectives. In summary, fruit thinning in loquat consistently improves individual fruit weight and fruit size, but its effect on total yield depends on the trade-off between reduced fruit number and improved fruit mass and grade. The most defensible conclusion is that early, moderate thinning is usually more effective for regulating yield formation than either late thinning or excessively severe fruit removal.

4 Effects of Fruit Thinning on Fruit Quality Formation in Loquat

4.1 Effects of fruit thinning on external fruit quality traits

Fruit thinning improves the external commercial quality of loquat mainly by increasing fruit size and fruit mass. In the recent ‘Precoce de Itaquera’ study, the strongest flower-bud thinning treatment produced an overall improvement in fruit quality, with four buds per cluster giving larger fruit (Nordi et al., 2025). Earlier work on loquat also showed that thinning was necessary because natural crop load produces many low-caliber fruits, and thinning to four fruits per panicle resulted in greater fruit length, width, and weight.