prolonged drought or waterlogging. Nutrition should be coordinated with irrigation, because citrus studies show that optimized water and potassium management can improve soil inorganic nitrogen availability, nutrient productivity, and irrigation water productivity. Irrigation-water chemistry alone does not predict plant nutrition well, so fertigation decisions should be based on soil properties and plant response rather than water source alone (Imbernón-Mulero et al., 2026).

6.2 Training and pruning for canopy development

Canopy training in young fingered citron orchards should aim to build a strong, balanced framework early and then maintain light penetration, ventilation, and manageable tree size through repeated light interventions rather than delayed severe cuts. Across perennial fruit crops, canopy management improves light interception, photosynthesis, microclimate, fruit quality, and orchard efficiency, while also helping balance vegetative and reproductive growth. In citrus, poorly maintained trees develop oversized, dense peripheral canopies that limit aeration and inner-canopy light, create unproductive shaded interiors, and make spraying and harvest less efficient. Orchard design and canopy management also interact, because spacing, row orientation, and tree shape together determine how well canopies intercept and distribute light.

For newly established trees, drastic pruning in the first year should be avoided, while unwanted shoots should be removed early and the developing framework should be guided before crowding occurs. Higher-density citrus systems have used central-leader, multiple-leader, and pyramidal canopy forms to improve light distribution, but these are examples from other citrus production systems rather than fixed training forms for fingered citron. The transferable principle is to establish a stable branch hierarchy, retain adequate leaf area, and avoid a dense outer canopy with a shaded interior. Maintenance pruning, cleaning pruning, and water-sprout removal are important after establishment because they remove dead or damaged wood, reduce excessive vegetative growth, and preserve productive canopy space. In young citrus under water-limited conditions, reducing early fruit load can favor vegetative development, and ground-cover management can also influence canopy expansion (Giménez-Valero et al., 2025). Fingered citron training should therefore be adjusted to its own branching habit, vigor, planting density, and local management objectives rather than directly adopting a canopy form developed for another citrus crop.

6.3 Pest, disease, and abiotic stress management

Young fingered citron orchards require integrated pest, disease, and stress management, but the risk profile should be defined from local fingered citron production rather than inferred directly from citrus decline in general. Surveys and reviews of citrus identify insects, diseases, climatic extremes, nutrient deficiency, poor planting material, and weak orchard management as major contributors to tree decline (Kalatippi et al., 2024). These citrus findings provide a broad risk framework for fingered citron orchard management. Drought can weaken tree defenses and interact with disease pressure, while salinity, flooding, nutrient imbalance, high temperature, and other abiotic stresses may also act in combination. However, the relative importance of individual diseases, pests, and abiotic stresses in fingered citron should be determined from local occurrence and monitoring rather than assumed to match other citrus crops. Standardized management should therefore integrate water, nutrition, sanitation, and plant-health monitoring.

Practical control should combine orchard sanitation, canopy hygiene, monitoring, and selective intervention. Citrus IPM programs provide useful examples: pruning diseased or infested branches, using monitoring traps, applying pesticides according to thresholds, removing dead twigs and dropped fruit, and conserving natural enemies can reduce pest and disease pressure and improve production efficiency (Meena et al., 2025). These measures illustrate IPM principles rather than define a fixed pest and disease list for fingered citron. Where viroid or other graft-transmissible pathogen risk is confirmed, clean nursery stock, surveillance, prompt removal of infected plants, and tool disinfection can be used as sanitation measures (Bagherian et al., 2026). Abiotic-stress mitigation may include suitable irrigation, mulching, salinity monitoring, soil amendments where justified, and tolerant rootstocks. For fingered citron, the choice of each measure should follow local diagnosis, because hygiene, water-nutrient management, and healthy propagation materials are transferable principles, whereas specific disease targets and treatment thresholds may differ among citrus crops (Kalatippi et al., 2024).