Figure 1 Hangbaiju production base of Tongxiang Lvkang Chrysanthemum Industry Co., Ltd. (Photo by Weiying Gao)

The broader chrysanthemum production landscape (including ornamentals and edible/tea chrysanthemums) faces an expanding list of pathogens and pests, and recent reviews emphasize that control challenges are not only biological but also technological: improved diagnostics are identifying cryptic species complexes and mixed infections that earlier management models treated as one disease. For example, the 2015–2025 synthesis of chrysanthemum pest/disease research stresses that fungal, bacterial, viral, and insect problems remain major drivers of yield and quality losses, while new molecular and ecological tools are reshaping both detection and control strategies (Chen et al., 2025).

For Hangbaiju specifically, two pest situations stand out in the accessible Tongxiang-focused literature. First is bloom-stage aphid infestation and contamination risk from M. sanborni, which is explicitly described as feeding on or hiding within flowers and being carried through harvest and processing. Second is the soil-borne/wilt complex that can cause plant loss and reduced stand vigor, and in some studies is linked to Fusarium incarnatum rather than the historically assumed Fusarium oxysporum forma specialis. These are not marginal issues: they are framed in the reviewed studies as drivers of significant losses or high management pressure (Cao et al., 2024).

Chemical control remains a dominant tool in many chrysanthemum production systems because it is fast, familiar, and often initially effective. Yet several limitations matter more sharply in Hangbaiju than in purely ornamental markets. First, consumers ingest Hangbaiju as an infusion, so the “edible flower” identity makes residue anxiety and risk perception more central; even when legal residue limits are met, visible or sensory signs of intensive pesticide use can damage market trust. Second, repeated chemical inputs can disrupt beneficial microbes and the ecological functions that support plant health; a greenhouse study on microbial inoculants in cut chrysanthemum explicitly notes that chemical control is common but “not environmentally friendly” and can have “negative effects on beneficial microbes” (Wang et al., 2024). Third, pesticide resistance and the behavioral ecology of pests can erode chemical performance. Thrips are a classic example: the chrysanthemum–thrips study using soil-dwelling predatory mites frames chemical control as difficult partly because thrips have a short generation time, can evade sprays, and can develop pesticide resistance, motivating a shift toward IPM and biological control. Finally, chemical programs often struggle with bloom-stage constraints. In Hangbaiju, bloom is not just a biological stage but also the commercial product stage: interventions must preserve flower quality and minimize contamination. When chemical sprays are used late, they can collide with harvest scheduling, pre-harvest intervals, and the practical challenge of keeping harvested flower material “clean” in both residue and appearance. This is one reason why control methods that are physically targeted (e.g., traps) or biologically selective (e.g., compatible botanicals, microbial antagonists, or natural enemies) have become more attractive in research and extension narratives (Cao et al., 2024).