Introduction to Taiwan's Floriculture Industry

Yen-Hua Chen

Associate Researcher, Taichung DARES, MOA

Introduction to Taiwan's Environment

Taiwan, an island surrounded by oceans, features mountainous terrain that creates diverse microclimates ranging from sea level to above 3,000 meters, supporting the growth of various flower varieties. Its geographical position across the Tropic of Cancer, combined with tropical and subtropical climates, allows Taiwan to cultivate various flowers including tropical orchids, subtropical chrysanthemums, and temperate lilies. High rainfall and monsoon climate provide abundant water for flowers, while also driving farmers to develop modern windbreak, drainage, and shading facilities, establishing technological advantages in facility agriculture. With Taiwan's high population density averaging 650 people per square kilometer and limited arable land, these natural and human conditions combined with Taiwan's advanced agricultural research system have enabled it to develop a diverse, high-quality floriculture industry.

Cultivation Mode

Taiwan's floriculture industry features diverse and technologically advanced cultivation modes that continuously evolve with market demands. Pot flower nursery production primarily takes place in Taichung, Changhua, and northern regions under greenhouses or plastic sheds, mainly cultivating ornamental plants such as kalanchoe,

poinsettia, and ferns to meet modern urban consumer needs. Cutting propagation technology mainly supports large-scale production of chrysanthemums, carnations, and other woody plants, while tissue culture is applied to orchids, requiring professional facilities like aseptic operation rooms to ensure variety purity and batch stability, forming the most complete flower industry chain. Field production focuses on chrysanthemums (approximately 600 hectares) and cut flowers like carnations and snapdragons, distributed across central and southern plains, employing techniques such as windbreak nets, shade nets, and ridge cultivation. Nursery production occupies the largest area, covering landscape trees like Taiwan pine and Norfolk Island pine, as well as annual ornamental plants, serving both domestic landscaping and export needs. Hydroponic cultivation is used for high-value cut flowers like roses, improving quality and yield through substrates like rockwool and precise nutrient solution systems. Facility cultivation, rapidly developing in recent years, integrates IoT and automation control technologies, representing the industry's future direction. These diverse cultivation modes collectively establish Taiwan's floriculture industry's profile and development potential.

Production Analysis

Taiwan's floriculture industry structure has undergone significant transformation over the past decade. Total cultivation area grew from 13,304 hectares in 2014 to a peak of 14,520 hectares in 2020, slightly declining to 13,964 hectares in 2023, reflecting the industry's shift from scale expansion to improving per-unit area value and quality. Structural changes are notable: from 2006 to 2016, nursery production increased 20% (from 7,695 to 9,220 hectares), orchids by 76% (from 574 to 1,011 hectares), potted flowers by 24% (from 824 to 1,019 hectares), while

cut flowers decreased 20% (from 4,265 to 3,358 hectares). From 2016 to 2023, nursery production remained stable, potted flowers continued growing nearly 24% (reaching 1,138 hectares), cut flowers further decreased 16% (to 2,826 hectares), and orchids slightly declined 5% (to 707 hectares). Within cut flowers, gladiolus declined most (-46%), followed by roses (-21.2%) and anthurium (-20%), with only lilies showing growth (+17.5%), reflecting consumer preference shifts from short-term cut flowers to perennial or long-term ornamental potted plants. Orchids are Taiwan's most competitive floriculture sector, with 2023 output value around USD 177 million, mainly from Phalaenopsis and Oncidium. Technical development progressed from basic infrastructure construction in the 1970s-1990s, to independent breeding and variety protection in the 1990s-2010s, to recent smart production management, forming a complete technical system.

Import-Export Trade Analysis

Taiwan's flower trade shows a clear surplus, demonstrating its international competitive advantage. Total export value reached USD 612 million in 2024, far exceeding the import value of USD 87.6 million, generating approximately USD 524 million in surplus. Export structure comprises orchids (52%), cut flowers (23%), potted plants (15%), and nursery stock (10%). Major export markets concentrate in the United States (31%, approximately USD 192 million) and Japan (29%, about USD 178 million), followed by Vietnam (10%, about USD 57.8 million) and the Netherlands (6%, about USD 38.7 million). Phalaenopsis is Taiwan's largest export flower, with mature plants mainly exported to the United States (55%), seedlings to Vietnam (31%) and Japan (29%), and cut flowers predominantly to Japan (85%). Oncidium exports heavily depend on the Japanese market, with cut

flowers accounting for 93% of exports to Japan, while seedlings mainly go to the United States (45%) and Malaysia (20%). For imports, the Netherlands is the largest source (53%, approximately USD 46.28 million), mainly supplying lily bulbs; Chile follows (13%, about USD 11.44 million), primarily providing sphagnum moss for orchid cultivation; Japan (9%, about USD 7.75 million) mainly supplies seeds and ornamental plant varieties.

Conclusion

After decades of development, Taiwan's floriculture industry has gradually transformed from labor-intensive to technology-oriented. Industrial structure has changed notably, with cut flower production continuously declining from 4,265 hectares in 2006 to 2,826 hectares in 2023 (33.7% reduction), while potted plants and nursery production have grown or remained stable during the same period. Production methods have shifted from mass production to high-value varieties and differentiated products, with e-commerce gradually developing and sustainable models like organic cultivation and circular agriculture gaining importance. However, the industry faces multiple challenges including extreme weather risks from climate change, low-cost competition from countries like Vietnam, rural population aging and labor shortages, and insufficient variety rights protection. Future development directions include strengthening facility cultivation application; expanding local variety R&D and improving variety rights protection; developing new markets in Southeast Asia to reduce overdependence on US and Japanese markets; and strengthening professional education to enhance industrial competitiveness.