

Strategies and Challenges of Floral Breeding Development in Taiwan

Chien-Young Chu

R&D Director, Young Sun Horticulture

Evolution of Taiwan's Floral Industry

Taiwan's cut flower industry emerged between 1960-1980, with early cultivation of chrysanthemums, gladiolus, and roses. The government initially introduced and tested cultivars before promoting them to farmers. Seedlings were propagated by growers or by the nurseries which were coached by researchers in universities. In 1977, successful trials of carnations in Puli led to the introduction of perennial flowers such as statice, gerbera, and lily, integrating Taiwan into the global floral market.

The high cost of imported seedlings drove Taiwan to develop tissue culture propagation. By 1988, the Law of Nursery was declared, but formal implementation of Plant Breeders' Rights (PBR) only began in 1997. At the same time, the governors suddenly realized the importance of the commercialization of floral breeding. Then government support for breeding R&D subsequently increased.

Competitive Advantages

Taiwan's floral breeding industry benefits from:

1. **Climate & Timing:** Global economic shifts in the late 20th century reduced competition, creating opportunities for Taiwan's new cultivars entry into the international market.

2. **Geographic Suitability:** Cool, dry winters support seed production, particularly for short-day and winter-flowering crops.
3. **Human Capital & Policy Support:** Skilled labor, strong agricultural R&D investment, and high adoption of new technologies.

Key Challenges

Despite nearly three decades of breeding efforts (1996-2025), progress remains limited due to:

1. **Insufficient Long-Term Investment:** Short-term projects lack sustained funding and strategic planning, leading to incomplete outcomes.
2. **Weak Market Competitiveness:** Limited understanding of floral marketing results in ineffective commercialization of protected cultivars.
3. **Propagation & Commercialization Barriers:** Some cultivars fail in large-scale propagation or lack market appeal, leading to failure in production.

Enhancing Breeding Competitiveness

To strengthen competitiveness, the **Business Model Canvas (BMC)** framework highlights key strategies:

- **Breeding Focus:** Competitive varieties must be resilient, easy to cultivate, and aligned with global trends (e.g., low-maintenance, tropical/subtropical adaptability, CAM photosynthesis plants for drought resistance, and to have endemic species).
- **Market-Driven Approach:** Varieties must meet consumer demand for aesthetic appeal, extended shelf life, and ease of care, while also aligning with the needs of retailers (marketability, low inventory loss), logistics providers (compact, durable, low transport loss), and growers (high yield, short cultivation cycle).

Improving Breeding Efficiency

1. **Data-Driven Breeding:** Comprehensive crop analysis, market trend assessment, and clear breeding objectives.
2. **Optimized Pollination Strategies:** Use pollen culture to assess fertility and control pollination timing.
3. **Advanced Breeding Techniques:** Introduce new traits via interspecific hybridization, restore fertility through polyploidization, and employ embryo rescue for hybrid viability.

Commercialization & Global Expansion

Floral breeding is increasingly driven by **variety licensing over direct seedling sales**. Key success factors include:

1. Identifying early adopters who recognize market potential.
2. Partnering with experts in global variety commercialization.
3. Engaging with leading industry stakeholders.

For examples: Young Sun Horticulture followed a contract of industry-academia collaboration model like **National Chung Hsing University and Japan's Hanakongou Co. Ltd.**

For international expansion, breeders must:

- Understand global plant quarantine regulations.
- Know international PBR frameworks.
- Actively participate in global floral exhibitions.
- Establish partnerships with foreign nurseries or specialized PBR agents.

Conclusion

With strategic investment, Taiwan has the potential to become a leading hub for tropical and subtropical flower breeding. The key to success lies in fostering dedicated breeders, strengthening partnerships with international companies, and aggressively expanding into global markets.