The International Review of Multidisciplinary Research
Volume 1, Issue 5, May 2026, pp. 651-663
https://doi.org/10.5281/zenodo.20230283

Ornamental Garden Profiles, Income Variability, and Determinants in Valladolid, Philippines

Edreson G. Torteo[1], Joemel A. Labrador[2]
University of the Philippines Los Banos, Los Banos, Laguna, Philippines[1]
Catholic Ming Yuan College, Murcia, Negros Occidental, Negros Island Region[2]
egtorteo@up.edu.ph[1], edresontorteo@gmail.com[1], 21-1-01986@vsu.edu.ph[2]

Article Details:

Received: 12 January 2026
Revised: 10 April 2026
Accepted: 25 April 2026
Published: 16 May 2026
Corresponding Email:
egtorteo@up.edu.ph

Recommended Citation:

Torteo, E. G. & Labrador, J. A. (2026). Ornamental Garden Profiles, Income Variability, and Determinants in Valladolid, Philippines. The International Review of Multidisciplinary Research. 1 (5), 651-663
https://doi.org/10.5281/zenodo.20230283

Index Terms:

Ornamental horticulture, plant genetic resources, spatial distribution, socio-economic profile, smallholder enterprises, productivity determinants, and sustainable livelihoods.

Abstract. Ornamental horticulture is an emerging and promising industry in the Philippines, providing livelihood opportunities, income security, socio-economic benefits, and personal well-being for growers. This study mapped the spatial distribution, assessed the socio-economic profile, and identified key determinants affecting the productivity of ornamental garden enterprises in Valladolid, Negros Island Region. A total of 28 ornamental gardens were surveyed using a structured instrument with integrated selection criteria. Results revealed a predominantly clustered distribution of ornamental shops in lowland and peri-urban barangays with high road and market accessibility. The majority of garden owners were female (67.86%), middle-aged (31–60 years), married, and had completed secondary education. Households were generally moderate in size, with low income levels, indicating that ornamental gardening primarily serves as a supplementary livelihood. Operational patterns showed small- to medium-scale gardens, long-term experience among owners, and shared household decision-making. Key productivity constraints included limited capital, high input costs, labor shortages, pest and disease incidence, climate-related challenges, and lack of government support. The study underscores the interplay of financial, environmental, institutional, and genetic factors in shaping ornamental horticulture, emphasizing the importance of conserving and utilizing plant genetic resources to enhance crop diversity, resilience, and market potential. Integrated support mechanisms from financial and training can help growers optimize production under variable environmental conditions. These findings provide valuable insights for policy-makers, local authorities, and stakeholders to develop ornamental horticulture as a sustainable socio-economic and ecological livelihood strategy, ensuring both the effective use of plant genetic resources and the long-term viability of small-scale growers.

Introduction

Ornamental or horticultural plant species represent a significant component of urban and peri-urban agriculture, contributing to aesthetic enhancement, environmental improvement, and local economic activity (Datta and Gupta, 2022; Francini et al., 2022; Goswami and Nautiyal, 2020). The global floriculture industry has expanded in response to increasing demand for potted plants, landscape ornamentals, and specialty garden species, positioning ornamental production as a high-value horticultural enterprise (Toscano et al., 2025). Beyond commerce, ornamental plants provide ecosystem services such as microclimate moderation, biodiversity support, and enhanced human well-being (Berger et al., 2022).

In developing countries, ornamental plant enterprises often operate at small to medium scales and provide supplementary or primary sources of household income (Dadang et al., 2020). Species composition in garden establishments is influenced by market demand, agro-climatic suitability, capital availability, and access to planting materials (Gabellini and Scaramuzzi, 2022; Altman et al., 2022). As commercial outlets and informal conservation spaces, ornamental gardens also serve as reservoirs of plant genetic resources, maintaining both native and introduced species. However, fluctuations in consumer

preferences, seasonal demand, input costs, and production constraints may result in income variability and uneven production performance among operators.

In the Philippines, the ornamental plant sector has grown alongside urbanization, landscaping initiatives, and increased interest in home gardening, particularly during and after the COVID-19 pandemic, as the evolutionary establishment of the Plantito and Plantita (Beligolo and Buenavista, 2023; Sumalatha et al., 2024). Despite this expansion, municipal-level data on the spatial distribution of ornamental gardens, enterprise characteristics, income patterns, and production determinants remain limited. The absence of baseline documentation constrains evidence-based planning for floriculture development and plant genetic resources conservation.

The Municipality of Valladolid in the Negros Island Region hosts emerging ornamental garden enterprises that cater to local landscaping and household markets. Yet, there is no consolidated assessment of their geographic distribution, operator profiles, income variability, and production constraints. Understanding these dimensions is essential for identifying production hubs, assessing economic stability, and determining the factors that influence enterprise performance. With these current constraints for developmental progression, the study aims to: (a) map the spatial distribution of ornamental gardens in Valladolid; (b) profile the socio-economic and enterprise characteristics of operators; (c) examine income variability among ornamental garden enterprises; and (d) identify the determinants affecting ornamental plant production. The results will provide baseline data for plant genetic resources inventory and support strategic interventions for sustainable ornamental horticulture development in the Negros Island Region.

Methodology

Research Design

This study employed a descriptive–quantitative research design to examine the spatial distribution, socio-economic profiles, income variability, production determinants, and ornamental plant inventory of garden enterprises in the Municipality of Valladolid (Negros Island Region), as illustrated in Figure 1. Valladolid is characterized by predominantly coastal and lowland barangays whose agro-climatic conditions influence ornamental plant production and marketing activities. Its strategic location along the national highway leading to Bacolod City further shapes enterprise accessibility and market linkages. The study commenced in December 2025 and included one month for field validation and verification.

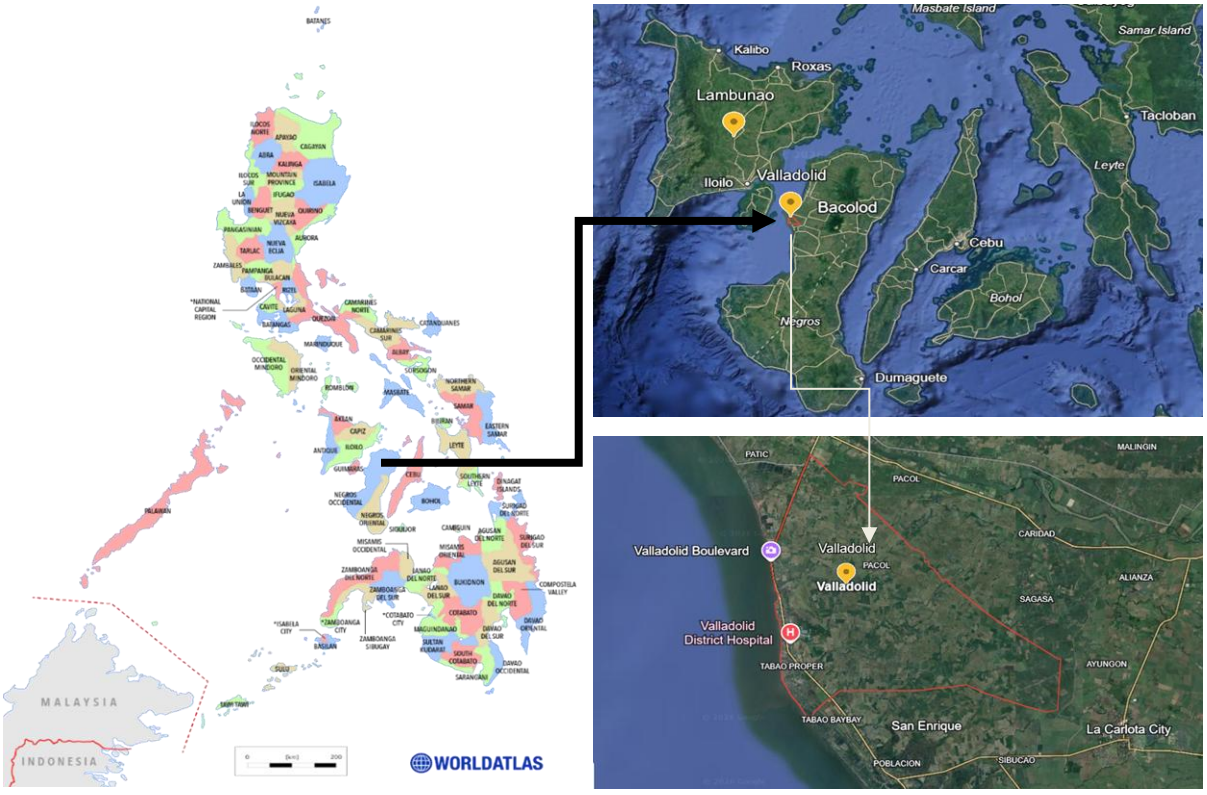

Figure 1. *Topographic Map of the Survey Area*

Respondents of the Study

A census approach was adopted to include all operational ornamental gardens, nurseries, and garden shops within the municipality during the study period. Establishments were identified through records from the Municipal Agriculture Office, barangay listings, online directories, and on-site validation. A total of twenty-eight (28) functional ornamental garden enterprises were confirmed. Each enterprise was georeferenced using Global Positioning System (GPS) coordinates for spatial mapping and distribution analysis. Respondents were garden owners, managers, or operators directly involved in ornamental plant production, propagation, procurement, or marketing.

Selection Criteria of the Respondents

To qualify, respondents had to: (1) be registered owner, co-owner, manager, or primary decision-maker; (2) be actively engaged in ornamental plant production or retailing; (3) have operated for at least one year to ensure availability of production and income records; (4) be physically located within Valladolid; and (5) voluntarily agree to participate. Seasonal vendors without fixed business locations and shops engaged solely in flower arrangement services were excluded.

Research Instrument

Data were collected using a researcher-structured survey questionnaire covering enterprise profile, production characteristics, income performance, and determinant factors affecting production and profitability. The instrument underwent content validation by experts in horticulture, agricultural economics, and research methodology to ensure clarity, relevance, and comprehensiveness. Necessary revisions were incorporated before field administration.

Research Procedure

Prior to data gathering, formal permission was secured from the Municipal Local Government Unit and the Municipal Agriculture Office of Valladolid. Barangay officials were informed to facilitate coordination and validation. A master list of enterprises was prepared and verified through field visits to confirm operational status. Qualified respondents were personally approached by the researcher, who explained the objectives and significance of the study before securing informed consent. The questionnaire was administered on-site, with clarifications provided as needed to ensure accuracy and completeness. Simultaneously, GPS coordinates of each enterprise were recorded, and field observations on road accessibility, proximity to market centers, and surrounding land use were documented to supplement spatial analysis. Completed questionnaires were reviewed for consistency and completeness before encoding and statistical processing. Spatial data were plotted and processed using Google Earth to generate distribution maps and analyze spatial patterns across barangays.

Figure 2. *On-site field interviews, plant identification, and spatial mapping of operational floral gardens functioning as small businesses in the Municipality of Valladolid, Negros Island Region, Philippines.*

Data Analysis

Data were analyzed using descriptive statistics, including frequency and percentage distributions, to summarize enterprise characteristics. Correlation and multiple regression analyses were employed to determine significant factors influencing production performance and income levels. Spatial outputs generated through Google Earth mapping illustrated distribution patterns in relation to barangay location, road accessibility, and market proximity.

Ethical Considerations

The study adhered to established ethical standards in social science and agricultural research. Institutional permission was obtained before collection, and participation was entirely voluntary. Respondents were informed of the academic purpose of the study and their right to decline or withdraw at any time without consequence. Confidentiality was strictly maintained. Personal identifiers and sensitive business information were coded and reported in an aggregated form to prevent enterprise identification. All data were securely stored and used solely for academic research, inventory development, and planning purposes. Principles of respect, confidentiality, and research integrity were observed throughout the study.

Results and Discussion

Ornamental Garden Mapping

CN	Barangay	Longitude (°E)	Latitude (°N)	Altitude (m)
F1	Alijis	122.51000	10.44667	10.00
F2	Alijis	122.50000	10.44028	4.90
F3	Alijis	122.49000	10.47750	4.90
F4	Bagumbayan	122.83000	10.73500	6.70
F5	Bagumbayan	122.50000	10.44000	10.00
F6	Bagumbayan	122.49000	10.43306	81.20
F7	Bagumbayan	122.49000	10.43611	41.00
F8	Lacaron	122.87000	10.78056	13.00
F9	Mabini	122.49000	10.49667	10.10
F10	Mabini	122.49000	10.49556	10.10
F11	Mabini	122.49000	10.49611	10.10
F12	Pacol	122.51000	10.46667	10.60
F13	Pacol	122.49000	10.47778	10.60
F14	Pacol	122.49000	10.49167	10.60
F15	Pacol	122.49000	10.46639	10.60
F16	Pacol	122.50000	10.46694	10.60
F17	Pacol	122.49000	10.47778	10.60
F18	Palaka	122.49000	10.47528	70.00
F19	Palaka	122.49000	10.47556	70.80
F20	Paloma	122.49000	10.43972	5.40
F21	Paloma	122.51000	10.47000	5.40
F22	Paloma	122.49000	10.46000	67.00
F23	Paloma	122.49000	10.47000	68.00
F24	Paloma	122.50000	10.46250	9.00
F25	Paloma	122.50000	10.46250	60.50
F26	Paloma	122.50000	10.49722	67.00
F27	Poblacion	122.49000	10.49639	10.10
F28	Sagua Banua	122.49000	10.43972	66.00

Table 1. Geographical coordinates of identified ornamental gardens in Valladolid

Spatial mapping of the 28 ornamental garden enterprises in Valladolid revealed a clustered distribution pattern. Nearly half (46%, 13/28) were concentrated in the lowland and peri-urban barangays of Alijis, Pacol, and Paloma, located within 1–2 km of major transportation corridors. The remaining 54% (15/28) were dispersed across Bagumbayan, Mabini, Palaka, Lacaron, Poblacion, and Sagua Banua in relatively peripheral locations. Altitudinal analysis showed that 82% (23/28) of enterprises were situated below 70 meters above sea level, indicating a strong preference for accessible lowland

environments. This spatial underscores strategic importance of accessibility, logistics efficiency, and market proximity in small-scale horticultural enterprises.

Location decisions appear consistent with supply chain network principles emphasized by Drechsler and Holzapfel (2023), where proximity to roads reduces transaction costs and enhances customer access. Similar clustering behavior has been documented in grassroots floriculture industries in Southern Philippines (Dadang et al., 2020) and among ornamental producers operating within localized, semi-formal market systems in Philippine cities (Garcia, 2013; Lopez and Ballano, 2012). The dominance of enterprises in lowland and peri-urban zones further reflects environmental and demographic advantages, including better access to water, infrastructure, and higher population density—conditions essential for ornamental production and retailing (Sumalatha et al., 2024; Swetha et al., 2024).

This pattern aligns with peri-urban transition theory, where livelihood enterprises integrate natural resource use with expanding urban markets (Goswami and Nautiyal, 2020). Beyond physical accessibility, clustering may also be driven by consumption dynamics. Consumer studies indicate that ornamental plant purchases are influenced by convenience, visibility, and lifestyle motivations (Paiva et al., 2020). In the Philippine context, the rise of "plantito/plantita" culture during the COVID-19 pandemic intensified localized demand and neighborhood-based trading networks (Alamada et al., 2022). The Valladolid pattern reflects a convergence of logistical optimization and socio-cultural demand. Finally, the concentration of enterprises in peri-urban lowlands suggests broader environmental implications. Ornamental plants contribute to urban ecosystem services, including biodiversity enhancement and microclimate regulation (Francini et al., 2022; Toscano et al., 2025), supporting localized greening initiatives in transitional landscapes. Overall, the clustered distribution demonstrates that ornamental horticulture in Valladolid operates within a hybrid economic–ecological system shaped by accessibility, peri-urban transition, consumer trends, and environmental functionality.

Socio-Economic Profile

The socio-economic profiling of ornamental garden owners in Valladolid revealed distinct demographic patterns. In terms of *sex*, a majority of the respondents were female (67.86%), while males comprised 32.14% of the population, suggesting that ornamental gardening in the area is predominantly managed by women. The *age distribution* showed that most respondents (53.57%) fell within the 31–60 years age bracket, indicating that middle-aged individuals are the primary participants in this sector, while a notable portion (42.86%) were over 60 years, reflecting the involvement of older adults in ornamental horticulture. Only a small fraction (3.57%) were under 30 years old, suggesting limited engagement from the younger generation. Regarding *civil status*, the majority were married (85.71%), which may imply that ornamental gardening is largely a family-oriented activity or livelihood. Single, separated, and widowed respondents represented minimal proportions. The *religious affiliation* showed diversity, with Roman Catholics (35.71%) and members of Iglesia ni Cristo (28.57%) forming the largest groups, followed by Baptists (17.86%) and Aglipayans (14.29%). This indicates that ornamental gardening in Valladolid cuts across different religious communities. *Educational attainment* among respondents varied, with most having completed secondary education (46.43%).

Elementary graduates accounted for 21.43%, tertiary graduates 17.86%, and a smaller proportion (14.29%) had pursued graduate-level education. This suggests that ornamental gardening is accessible to individuals across a range of educational backgrounds, with a strong base among those with secondary education. Over half of the respondents (53.57%) earned below Php 5,000, indicating that a substantial number of ornamental garden operators are engaged in low-income activities. Around 28.57% earned less than Php 10,000, while only 3.57% earned more than Php 20,000, highlighting that ornamental gardening in Valladolid is largely a subsistence or supplementary income activity. Household characteristics further illustrated family dynamics among respondents. Most households consisted of 4–6 members (64.29%), with smaller households of 0–3 members comprising 32.14%, and very few households having 7–10 members (3.57%). The gender composition of households indicated that male household members were predominantly 0–3 (82.14%), while female members were also mostly 0–3 (92.86%). Regarding *family type*, nuclear families dominated (64.29%), while single and extended families each represented 17.86% of the sample. These findings suggest that ornamental garden ownership is primarily concentrated among middle-sized, nuclear households. The socio-economic profile of ornamental garden owners in Valladolid reflects patterns documented in both global and Philippine ornamental horticulture. The predominance of female and middle-aged respondents supports findings that ornamental plant enterprises often attract individuals who balance domestic responsibilities with income-generating activities (Paiva et al., 2020; Reis et al., 2020).
This gendered participation is further linked to aesthetic-driven motivations in ornamental plant domestication, as explained by Altman et al. (2022), who argue that cultural preferences strongly shape engagement in ornamental cultivation. The concentration of married respondents within nuclear households reinforces the view that peri-urban gardening functions not only as an enterprise but also as a lifestyle-embedded activity integrated into household spaces (Goswami and Nautiyal, 2020). The relatively low monthly income reported by most respondents suggests that ornamental gardening operates primarily as a supplementary livelihood. Similar grassroots constraints—including limited capitalization, informal marketing channels, and restricted market access—have been documented among small-scale

ornamental growers in the Philippines and other developing contexts (Dadang et al., 2020; Garcia, 2013; Drechsler and Holzapfel, 2023). Entrepreneurial adaptability, direct-to-consumer selling, and localized marketing strategies remain critical for sustaining small enterprises (Bautista and Savellano, 2020).

These findings position Valladolid's ornamental gardens within a semi-formal, localized market system where household-based production complements modest income streams. Ecologically and socially, the engagement of smallholder households in ornamental gardening contributes to broader urban sustainability functions. Ornamental plants enhance urban biodiversity, provide pollinator habitats, regulate microclimates, and improve landscape aesthetics (Francini et al., 2022; Toscano et al., 2025). Beyond environmental services, ornamental plant management is associated with psychological well-being and improved perceptions of environmental quality (Berger et al., 2022).

In the Philippine setting, the rise of "Plantito and Plantita" culture has amplified participation in ornamental gardening and informal plant markets (Alamada et al., 2022). However, increased demand may also pose sustainability risks if plant sourcing is not responsibly managed, as noted by Beligolo and Buenavista (2023). The ornamental garden owners of Valladolid represent a convergence of livelihood diversification, aesthetic-cultural engagement, and environmental stewardship. Their socio-economic profile and enterprise characteristics suggest opportunities for targeted capacity-building, improved supply chain integration, and sustainable production strategies to strengthen both economic resilience and ecological contributions (Gabellini and Scaramuzzi, 2022; Sumalatha et al., 2024; Swetha et al., 2024). Meanwhile, in terms of community involvement, the graph shows varying levels of community participation among ornamental garden owners in Valladolid, Negros Island Region. Most respondents reported no involvement in ethnic associations (27/28), organizations for persons with disabilities (25/28), and medical history–sharing initiatives (21/28). Few number participated in these specific affiliations (1, 3, and 7 respondents, respectively).

In contrast, involvement in general community organizations was relatively high, with 21 respondents affirming membership compared to 6 who were not involved. This pattern indicates selective engagement, with ornamental garden owners favoring broader civic or community-based groups over specialized social or sectoral associations. Limited participation in ethnicity-based and PWD-focused organizations may reflect demographic composition, low perceived relevance, or the absence of strong institutional linkages within these categories. Similarly, reluctance to engage in medical history–sharing initiatives may be influenced by privacy considerations and individualized health management practices. Conversely, stronger participation in general community organizations suggests recognition of the practical and social benefits derived from broader networks. Such engagement can facilitate knowledge exchange, market information sharing, and collaborative livelihood activities key elements in small-scale horticultural enterprises (Paiva et al., 2020). Community-based interaction also supports the social dimensions of urban greening and ornamental horticulture, which contribute to environmental awareness and collective stewardship (Francini et al., 2022). Overall, the selective pattern of participation highlights the importance of designing inclusive and livelihood-oriented community programs. Strengthening linkages between ornamental garden owners and local institutions may enhance social cohesion, improve access to training and market opportunities, and integrate aesthetic horticulture more effectively into community development strategies.

Demographic Attributes	Distribution	Frequency (n)	Percentage (%)
Sex	Male	9	32.14
	Female	18	67.86
	Total	**28**	**100%**
Age	0 – 30 years old	1	3.57
	31 – 60 years old	15	53.57
	Above 60 years old	12	42.86
	Total	**28**	**100%**
Civil Status	Single	2	7.14
	Married	24	85.71
	Separated	1	3.57
	Widowed	1	3.57
	Total	**28**	**100%**
Religion	Aglipay	4	14.29
	Baptist	5	17.86
	Iglesia ni Cristo	8	28.57
	Roman Catholic	10	35.71
	Seventh-day Adventist	1	3.57
	Total	**28**	**100%**
	Elementary	6	21.43

Highest Educational Attainment	Secondary	13	46.43
	Tertiary	5	17.86
	Graduate School	4	14.29
	Total	**28**	**100%**
Monthly Income	< Php 5,000.00	15	53.57
	< Php 10,000.00	8	28.57
	< Php 20,000.00	4	14.29
	> Php 20,000.00	1	3.57
	Total	**28**	**100%**
Number of Family Members	0 – 3 members	9	32.14
	4 – 6 members	18	64.29
	7 – 10 members	1	3.57
	Total	**28**	**100%**
Number of Male Household Members	0 – 3 members	23	82.14
	4 – 6 members	5	17.86
	Total	**28**	**100%**
No. Female Household Members	0 – 3 members	26	92.86
	4 – 6 members	2	7.14
	Total	**28**	**100%**
Type of Family	Single	5	17.86
	Nuclear	18	64.29
	Extended	5	17.86
	Total	**28**	**100%**

Table 2. *Socio-Economic Profile of Ornamental Gardens in the Municipality of Valladolid*

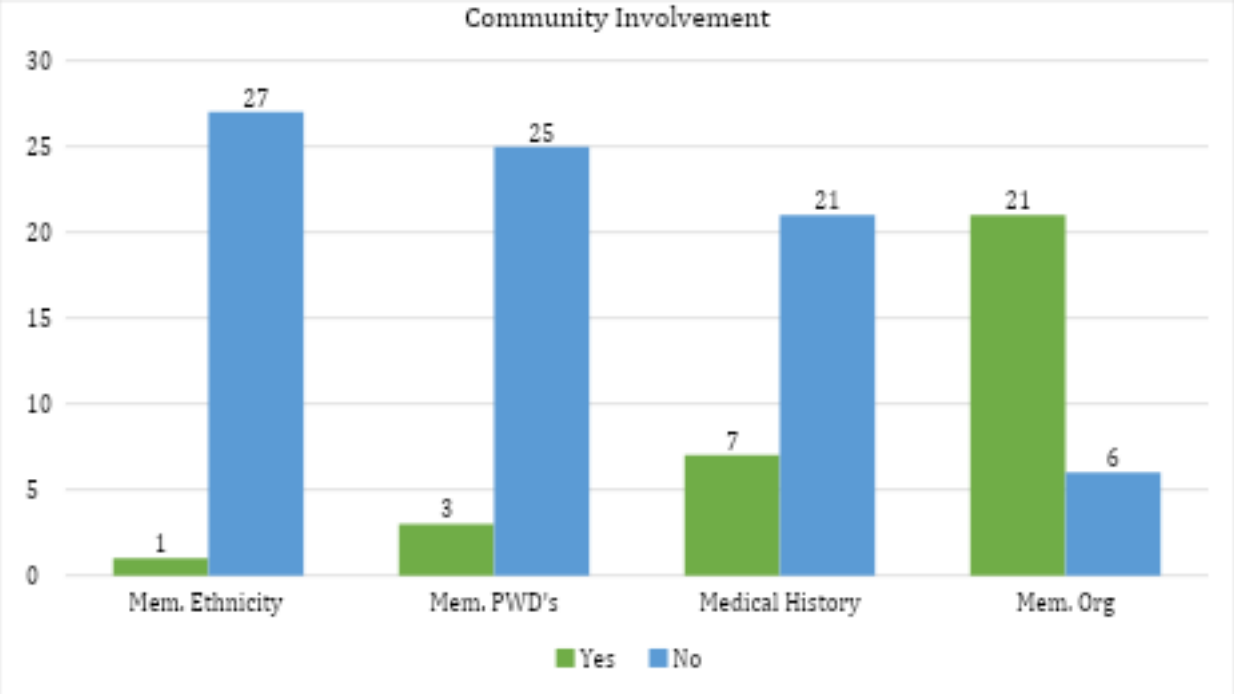

Figure 3. Community involvement of identified ornamental garden shops of Valladolid, Negros Island Region.

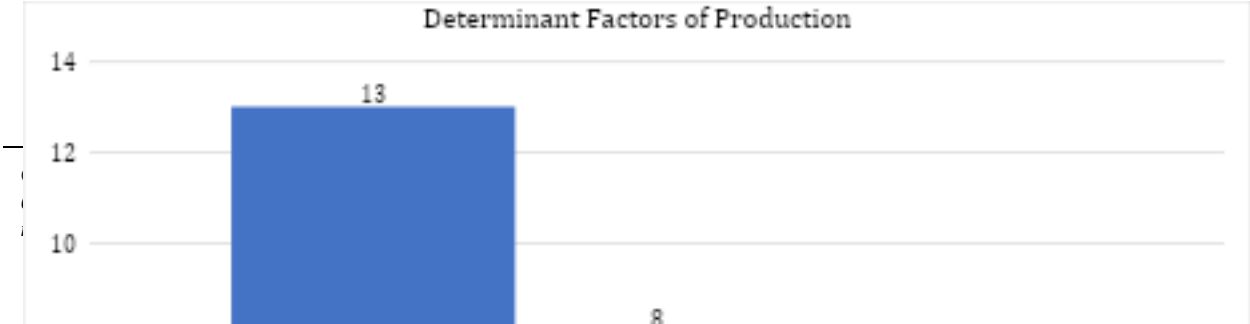

Figure 4. *Determinant factors affecting the productivity of the ornamental garden owners of Valladolid, Negros Island Region.*

Garden Characteristics	Distribution	Frequency (n)	Percentage (%)
Years in Farming	0 – 3 years	1	3.57
	4 – 6 years	5	17.86
	7 -10 years	5	17.86
	More than 10 years	17	60.71
	Total	**28**	**100%**
Size of Garden Shop	Below 1 ha	19	67.86
	1 – 3 ha	18	64.29
	Above 3 ha	1	3.57
	Total	**28**	**100%**
Who Decides in Operation	Wife	8	28.57
	Husband	9	32.14
	Both	11	39.29
	Total	**28**	**100%**
Status of Land	Owned	16	57.14
	Rented	5	17.86
	Government/ Private	7	25.00

	Total	**28**	**100%**
Sources of Income	Rice Farming	9	32.14
	Vegetable Farming	9	32.14
	Self-Employed/Business	7	25.00
	Salary Employment	2	7.14
	Total	**28**	**100%**
Source of Stocks	Fellow Farmer	8	28.57
	Local Market	8	28.57
	Agricultural Supply Store	6	21.43
	Government Agency	6	21.43
	Total	**28**	**100%**
Number of Stock Plants	Less than 100 plants	18	64.29
	100 – 1000 plants	5	17.86
	More than 1000 plants	5	17.86
	Total	**28**	**100%**
Access benefits from the Government and Private Sectors	**Yes**	11	39.29
	No	17	60.71
	Total	**28**	**100%**

Table 3. Garden Characteristic Profile of Ornamental Gardens in Valladolid, Philippines

Garden Characteristic Profile

The profile of ornamental gardens highlights the experience, scale, and operational patterns of the respondents. Majority (60.71%) have been engaged in ornamental gardening for *more than 10 years*, indicating a well-established livelihood for many households, while only a small fraction (3.57%) are new entrants with 0–3 years of experience. Most garden shops are relatively small in size, with 67.86% occupying *less than 1 hectare* and 64.29% falling in the 1–3 hectare range, suggesting that these gardens are predominantly small- to medium-scale operations. Operational decisions are fairly balanced: 39.29% of households make decisions jointly, while 32.14% and 28.57% are decided by the husband and wife, respectively, reflecting a shared household involvement in business management. Regarding *land status*, more than half of the gardens (57.14%) are owned, rented (17.86%), and 25% are government or privately-leased, indicating a mix of tenure arrangements.

Income and resource management reveal diversified livelihood strategies. Primary income sources include *rice and vegetable farming,* accounting for 32.14% of respondents, followed by self-employment/business and salary employment (7.14%), highlighting ornamental gardening are supplemented by other agricultural or business activities. Stock plants are mostly sourced locally, either from fellow farmers (28.57%) or local markets (28.57%), with agricultural supply stores and government agencies contributing equally (21.43%). The majority of respondents (64.29%) maintain *<100 plants***,** reflecting the small-scale nature of their operations, while only 17.86% manage >1,000 plants. Access to benefits from government and private sectors is limited (60.71%), suggesting a gap in institutional support and resource provision for ornamental horticulture. The predominance of experienced gardeners operating small-scale garden shops suggests that ornamental horticulture functions as a stable but modest livelihood enterprise.

Long-term engagement indicates reliance on accumulated technical knowledge and informal market networks, consistent with findings that smallholder ornamental producers sustain operations through experience-based management and localized supply chains (Dadang et al., 2020; Drechsler and Holzapfel, 2023). The observed shared decision-making

between husbands and wives reflects household-level enterprise management, aligning with peri-urban livelihood structures where family labor and joint financial decisions support small businesses (Goswami and Nautiyal, 2020; Reis et al., 2020). The presence of diversified income sources highlights risk management strategies typical of smallholder systems. Income diversification enhances household resilience against market fluctuations and seasonal demand variability in ornamental plants (Osawaru and Ogwu, 2014) as observed in Nigeria, Africa. However, limited access to sectoral support indicates constraints in capital, technical assistance, and structured market integration, which may restrict enterprise expansion and long-term competitiveness (Beligolo and Buenavista, 2023; Gabellini and Scaramuzzi, 2022). The relatively small number of stock plants maintained by most gardens further reflects limitations in land area, financial capacity, and production scale.

These findings underscore the need for targeted capacity-building initiatives, improved supply chain coordination, and strengthened extension services to enhance productivity, sustainability, and market positioning of ornamental garden enterprises (Francini et al., 2022; Paiva et al., 2020). Strengthening institutional support mechanisms could enable experienced yet resource-constrained growers to transition from subsistence-oriented operations toward more commercially integrated ornamental production systems.

Determinants of Production

Figure 4 illustrates the key determinants influencing the productivity of ornamental garden enterprises in Valladolid, Negros Island Region. Among the factors identified, limited capital, high cost of inputs, and labor shortages were cited most frequently. This finding aligns with the observations of Drechsler and Holzapfel (2023), who noted that small and medium-sized horticultural enterprises often face financial and labor constraints that limit their capacity to adopt improved technologies or scale operations. Limited financial resources directly constrain access to quality inputs, modern tools, and skilled labor, which are crucial for sustaining productivity in ornamental horticulture (Dadang et al., 2020; Paiva et al., 2020). These challenges suggest the potential value of microfinance schemes, cooperative labor arrangements, or subsidized inputs to alleviate economic bottlenecks and enhance production efficiency.

Environmental and biological risks were among the most frequently cited constraints, with respondents mentioning pest and disease incidence and climate-related concerns eight times. This underscores the vulnerability of ornamental plants to both biotic and abiotic stressors, particularly under conditions of erratic rainfall and increasing temperature variability. Studies confirm that pests, diseases, and climate fluctuations significantly affect plant health, quality, and market value in ornamental systems (Francini et al., 2022). Strengthening adaptive management—through integrated pest management (IPM), climate-resilient crop scheduling, and balanced nutrient management—has been recommended to enhance production stability and sustainability (Dadang et al., 2020; Sumalatha et al., 2024).

Figure 5. Common, distinct, and unique ornamental plants identified in the Municipality of Valladolid, Negros Island Region: a. Oak-leaf Philodendron (Philodendron pedatum), b. Bagawak-Morado (Clerodendrum quadriloculare), c. Fire-cracker flower (Crossandra infundibuliformis), d. Aglaonema nitidum 'Silver Queen' (back of the grandmother respondent), Aglaonema 'Dud Unyamanee' (upper layer behind the interviewer), Aglaonema spotted evergreen (Aglaonema costatum, 2nd layer of flower rack), Heart of Jesus (Caladium bicolor, 2nd layer of flower rack), and d. Philodendron Tricolor 'Prince of Orange' (Philodendron erubescens K. Koch & Augustin, variegated form).

Concerns regarding limited government support further highlight institutional gaps affecting small-scale ornamental enterprises. The absence of extension services, financial subsidies, and structured market facilitation can constrain productivity growth and enterprise expansion. Addressing these constraints requires coordinated policy interventions, including technical training, access to credit, and improved market linkages. An integrated support framework combining

financial capital, adaptive horticultural practices, and institutional backing can strengthen resilience and profitability while enhancing contributions to urban biodiversity and ecosystem services (Altman et al., 2022; Beligolo and Buenavista, 2023; Toscano et al., 2025; Swetha et al., 2024). Such holistic strategies reinforce the multifunctional role of ornamental horticulture in livelihood generation, sustainable urban greening, and socio-cultural development (Gabellini and Scaramuzzi, 2022; Berger et al., 2022).

Conclusion and Recommendations

Ornamental garden enterprises in Valladolid are primarily located in lowland, peri-urban areas with easy access to roads and markets, indicating that accessibility plays a key role in enterprise viability. The sector is largely managed by middle-aged women, often within nuclear family households, and is generally characterized by small- to medium-scale operations. Most garden owners have long-term experience and rely on ornamental gardening as a supplementary livelihood, with additional income from farming or other business activities. Productivity is limited by financial constraints, high input costs, labor shortages, pest and disease incidence, climate-related challenges, and insufficient institutional support. Overall, the sustainability and growth of ornamental gardening in Valladolid depend on addressing these financial, environmental, and operational challenges while enhancing enterprise resilience and market opportunities. With these pressing concern, it implies to provide access to microfinance, cooperative labor-sharing schemes, or subsidized inputs to help garden owners overcome capital and labor limitations. Implement training programs on pest control, disease prevention, sustainable fertilizer use, and climate-resilient planting practices. Establish extension services, grants, and market linkages to improve technical capacity, resource access, and enterprise sustainability. Encourage participation in community programs that foster collaboration, knowledge exchange, and collective problem-solving among ornamental gardeners. Advocate for initiatives that highlight the ecological, aesthetic, and cultural benefits of ornamental gardening while promoting responsible sourcing and plant conservation.

Disclaimer (Artificial Intelligence)

The researcher affirmed that no generative artificial intelligence (AI) tools, including large language models such as ChatGPT or Copilot, and no text-to-image generation technologies were used in the writing, editing, or preparation of this research article.

Acknowledgement

The researchers express his sincere appreciation to the Valladolid Local Government Unit (LGU), Dennis Malagquit, Instructor of Central Philippines State University – Valldolid Extension Class, and BSAB 3rd- Year Students for their assistance, coordination support, and facilitation during data collection and mapping. A deep gratitude of appreciation and thankfulness is also extended to the ornamental garden owners (Plantita/ Plantito) who generously shared their time, experiences, and insights, making this study possible.

Funding

This research was fully self-funded by the author. No external funding agencies, grants, or institutional subsidies were received in the conduct of this study.

Competing Interests Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study; all data used were obtained from previously published sources as cited in the reference list.

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Appendices

No appendices are attached to this study.