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Risk of Chrysantemum Flowers Supply Chain in Central Java Province and Yogyakarta Special Region

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ABSTRACT
The distribution of chrysanthemum flowers from Bandungan District to consumers in the city can be at risk of damage. The objective of this study is to determine the risk sources and types in the chrysanthemum supply chain; analyze risks probability and impact risk as well as risk capacity management among the chrysanthemum supply chain agents; and identify the risk priority in the chrysanthemum supply chains in accordance with the level of loss and vulnerability. Data collection was conducted between April and September 2019 at Bandungan sub-distric Semarang distric. The researcher interviewed fifty farmers, fifteen middlemen, eight suppliers, and twentyfive florists. Furthermore, the interview was also administered to the three experts regarding chrysanthemum faming. These were the leaders of Astha Bunda Kalirang Farmers Group, the head of marketing division of Astha Bunda Kaliurang Farmers Group, and staff on BPTP in Yogyakarta. Data was analyzed using Rapid Agricultural Risk Assessment (RapAgRisk). The results showed that there were six risk sources and 23 risk types presented along the chrysanthemum supply chain. Six risks source such as natural hazard, weather, market, management and operational, logistic and infrastructure, and plant biological and environmental factor. Supply chain actors who have the highest risk are at farmer level.

Keywords: Chrysanthemum, rapagrisk , risk management, supply chain

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INTRODUCTION

With genetic and color diversities, chrysanthemum flower is a potential agribusiness commodity in Indonesia which is also reflected in its increasing market demand. Chrysanthemum grows optimally in the high plateau. Bandungan sub-district in Semarang district, Central Java, especially the mountainous area of Ungaran, is the largest chrysanthemum production centre in Indonesia (BPS, 2018). Chrysanthemum production in Bandungan contributes 30.54% to the overall chrysanthemum production in Indonesia (Pusdatin, 2014). The chrysanthemum flower is marketed to

many regions in Central Java and Yogyakarta, including to Semarang, Surakarta, and Yogyakarta cities (Putra et al., 2019). Nevertheless, Bandungan's chrysanthemum is also distributed throughout Indonesia. As a perishable product, the chrysanthemum journey from farmers to consumers endures risks which may affect its quality, marketed quantity, and economic loss for the supply-chain agents.

In general, supply chain risk management of agricultural products, especially chrysanthemum flower is different from those of non-agricultural products and even other agricultural commodities. Some reasons consist of: (1) chrysanthemum is easy to wither and damaged; (2) it has a short lifespan, approximately seven days; and (3) plant growth depends on natural factors, and it is not so easy to modify the flowers' environment during its growth (Wiraatmaja et al., 2007). All of these factors need to be considered in the design of chrysanthemum's supply chain risk management. There are many studies on the risk of chrysanthemum flowers, however, most of which only focus on the risk of production such as research that has been conducted by Fadlilah et al. (2020) which explained that the factor affecting the risk of chrysanthemum production is the use of chemical fertilizers.

Furthermore, the study on the supply chain of chrysanthemum flowers focuses on supply chain performance such as research conducted by (Putra et al., 2019). Hence, the novelty of this research is to present any risks in the chrysanthemum supply chain, with a rapid agricultural risk assessment approach which focuses on the agricultural products. The objective of this study is to: (1) identify the risk sources and types in the chrysanthemum supply chain; (2) analyze risks in the supply chain by assessing the probability, impact and capacity of the risk management; and (3) determine risk priorities in the chrysanthemum supply chain based on the level of loss and casualy. By knowing the identification, analysis, and risk priority in the chrysanthemum supply chain, it may uphold the actors in anticipating and managing the existing risks which causes losses.

METHODS

Data collection was conducted between April and September 2019. Bandungan sub-district in Semarang district was purposively selected, for the reason of it as the area contributed 99.2% of chrysanthemum flower production in Central of Java (BPS, 2019). In terms of supply chain, the researcher interviewed farmers, middlemen, supplier, and florist, and did not collect data from the upstream agribusiness agents (e.g., input producers, agricultural input shop). In total, there were 101 interviewed respondents.

Fifty farmers were chosen purposively, among those with a minimum of three-year experience in chrysanthemum farming in order to identify in detail the risks of chrysanthemum production. Meanwhile, snowball sampling method was employed to select middlemen, suppliers, and florist. This study gathered data from fifteen middlemen, eight suppliers and twentyfive florist. Moreover, the

interviewed farmers and middlemen were located in Bandungan, and the interviewed suppliers and florists were those operating in Semarang, Surakarta, and Yogyakarta cities.

Furthermore, there were also three interviewed experts who were the leader, the head of marketing division of Astha Bunda Kaliurang Farmers Group, and also a staff of the BPTP in Yogyakarta. Astha Bunda association is a institution for chrysanthemum cultivation companient and marketing of chrysanthemum cut flowers in Kaliurang, Yogyakarta. BPTP Yogyakarta has pioneered research activities in the field of ornamental chrysanthemum cultivation since 2005. In order to research the chrysanthemum risk management, this study follows method of the Rapid Agricultural Supply Chain Risk Assessment (RapAgRisk), first introduced by Jaffe et al. (2010) which the process is as follow:

1. The first step is to identify the risk events that occur to all stakeholders in the chrysanthemum supply chain. Risk identification is performed based on several categories of risk sources consisting of risks related to weather, natural hazards, plant and environmental biology, markets, logistics and infrastructure, management and operations, public policies, and institutional and political-related risks.
2. Afterwards, the probability of risks and their impacts of each risk is assessed.
3. The risk probability is measured on a 1-5 scale which are: (1) rarely occurs, under certain condition only; (2) sometimes, occurs under certain condition; (3) occurs in certain condition; (4) often occurs in many conditions; (5) always occurs in any condition.
4. Furthermore, the risk impact assessment was administered systematically using another 1-5 scale: (1) no physical losses, very few financial losses; (2) physical losses are still manageable, a little financial loss; (3) moderate physical and financial losses; (4) high physical and financial losses; (5) highly fatal physical and financial losses.
5. Next, the assessed risk probability and impact are mapped out into an expected loss ranking matrix (Table 1). For instance, a risk assessed by the respondents to have a scale of 4 in probability and 2 in impact will be categorized as risk priority 3.

Table 1. Expected Loss Ranking Matrix

Probability	1					
	2					
	3					
	4					
	5					
		1	2	3	4	5
		Risk Impact				

Source: (Jaffee et al., 2010)

Information: Priority 1 (vertical line) relates to high losses; Priority 2 (horizontal line) to moderate losses; and Priority 3 (blank line) to low losses.

Table 2. Vulnerability Risk Matrix

	Capacity to Manage Risk				
Loss Ranking	1	2	3	4	5
Priority 1					
Priority 2					
Priority 3					

Source : (Jaffee et al., 2010)

Information: Horizontal line (extreme vulnerability): high losses, low risk management. Vertical line (high vulnerability): moderate to high losses, low to moderate risk management. Slashes (moderate vulnerability): moderate losses, moderate risk management. Blank (low vulnerability): low to moderate losses, moderate to high risk management. Crosses (limited vulnerability): low losses, high risk management.

6. A vulnerability risk matrix is then performed by combination of capacity to manage risk with the results of the risk impact matrix.
7. Capacity to manage risk is measured on a 1-5 scale: 1) some are effective but the approach tends to be expensive and unsustainable; (2) between 1 and 3; (3) effective but not yet affordable and sustainable; (4) between 3 and 5; and (5) very effective and has a high probability of sustainability. The assessment performed by the supply chain agent is validated by three chrysanthemums experts.

Risk prioritization was performed in 2 ways. The first is from the result of the Rapid Agricultural Supply Chain Risk Assessment (RapAgRisk), and the second is the calculation employing the natural disaster risk method. Probability, impact and risk management capacity score for natural disaster risk method is based on Rapid Agriculture Risk Assasment score. The natural disaster risk method adopted of research conducted by Sudibyakto (2009):

$$Risk = \frac{probaility * impact}{risk\ management\ capacity}$$

(Formula 1)

RESULTS AND DISCUSSION

Risk Sources and Types in Chrysanthemum Supply Chain

Risk identification was performed by determining risk sources, actors, and risk types. Identification of risk sources refers to the study introduced by Jaffee et al (2010) regarding the Rapid Agricultural Supply Chain Risk Assessment (RapAgRisk). Actors and risk types were determined based on the results of the study (primary data). This study found six risk sources (out of the total of eight risk sources) and 23 risk types. Sources of risk identified in this study include those related to natural hazards, weather, plant biological and environmental factors, management and operations, markets, and logistics and infrastructure (Table 3). The other two risk sources, i.e., risks related to public policy and politics were not presented during the data collection in the study area.

Table 3. Identification of Chrysanthemum Flower Supply Chain Risks

Risk Sources	Actors	Risk Types	Code
Natural hazards	Farmers	Damaged Greenhouse	F1
Weather		Leaf rust	F2
Plant biological and the environmental factors		Stem rot	F3
Management and operation		Whitefly	F4
		Aphids	F5
		Caterpillar	F6
		Thrips	F7
		Red mites	F8
		Borer	F9
Market	Farmers	Low selling prices in the market	F10
Market	Middle-	Unpaid receivables	P1
	Men	Unsold flowers	P2
Logistic dan infrastructure	Agent	Mixed low- and high-quality flowers in packaging	P3
Plant biological and the environmental factors		Flowers wither quickly	P4
Market	Supplier	Unpaid Receivables	T1
	Agent	Unsold flowers	T2
Management dan operation		Stolen flowers	T3
Logistic dan infrastructure		Mixed low- and high-quality flowers in packaging	T4
Plant biological and the environmental factors		Flowers wither quickly	T5
Market	Florist	Unsold flowers	FL1
Management dan operation	Agent	Difficulties in finding suppliers	FL2
Plant biological and the environmental factors		Flowers wither quickly	FL3
		Low-quality flowers	FL4

Source: Primary data, 2019

Based observations and interview before study, a common natural hazard which occurs annually in Bandungan is fierce winds accompanied by heavy rains, usually takes place between September and February. It has caused damage of the greenhouse (F1), due to its cover, which is usually made of plastic, to blow off (Astaningrum & Djuwendah, 2017). Regarding risk source from weather, higher humidity together with lower air temperature is a common cause for leaf rust (F2) induced by the *Puccinia horiana* (N. Hanudin et al., 2016) (BARHATE et al., 2015). Next, stem rot (F3) is a common risk from plant biological and environmental factors caused by chrysanthemum flower seeds which were infected by the *Fusarium* sp.

The risk of pest was categorized as linked to management and operations,

since the pests, in fact naturally present during crop cultivation. With proper management, the pests would not harm chrysanthemum production. However, in the study area, farmers are often late in managing the pests or are overdosed the use of pesticide. Farmers also rarely cultivate soil regularly and provide soil nutrition which consequently increase the risk of flowers damage caused by the pest attack.

Risk related to the market is low selling price in the market of chrysanthemum (F10) at the farm level due to fluctuations in demand for chrysanthemum (Table 3). If is the demand is low, the price will be low. Times with high demand for flowers occur in the months which are believed to be good months to hold matings. Based on the Javanese calendar, the months include *Suro*, *Mulud*, *Jumadil Awal* and *Sapar*. Other risks related to market are unpaid receivables (P1, T1) and unsold interest (P2,T2, FL1) due to low demand during months which are believed to be not good to hold matings. These risks take place at the middlemen and supplier level, as well as at florist.

The risks related to logistics and infrastructure are the mixed of low- and high-quality flowers in packaging (P3, T4) at the middlemen and supplier level (Table 3). It happens when one or two flowers classified as grade C quality (i.e., stalk lengthis longer than 100 cm and defective due to pests or diseases attack) are slipped into healthy flowers packing. As a result, the pests and diseases of these C quality flowers are transmitted to the healthy flowers, and thus, reduce the overall flowers quality. According to Tsolakis et al., (2014), packaging techniques along the supply chain are closely related to the quality of products received by the consumers. The risks related to plant biology and the environment come from internal biological factors which are flowers wither quickly (P4,T5, FL3) at middlemen, supplier, and florist (Table 3). Based on the research results, chrysanthemum flower storage is performed by cutting it every day, and putting it in a bucket filled with water. Based on previous studies, it is revealed that immersion in water alone is not optimal (Wiraatmaja et al., 2007). In addition to the plant biological factor, environmental factor such as storage temperature may also contribute as a risk factor. Storage temperatures which are too high can also cause flowers wither quickly (Sajid et al., 2018)

Another risk related to management and operations at supplier level is stolen flowers (T3) at supplier level (Table 3), as a result of a storage area which is not tightly locked. Flowers theft occurs when the demand for flowers is high, and the suppliers have difficulty in fulfilling the flowers demanded. This situation drives some irresponsible suppliers to steal flowers from the other suppliers or traders. On the other hand, risk related to management and operations at florist level is difficulties in finding suppliers (FL2). It occurs especially around the mating seasons, when demand is greater than the stock at the store, causing florists to compete with each other to discover stock of flowers. The supply of flowers is lower than the demand, flowers in the market become scarce.

Another risk borne by florist is low quality flowers (FL4), as related to plant biology and the environment (Table 3). From the view of plant biology, the low-quality flowers is caused by the long storage by the previous supply-chain actors. Moreover, since flowers transaction usually takes place very early in the morning, previous supply-chain actors are less careful, or even do not check the quality of flowers to be purchased.

Chrysanthemum Supply Chain Risk Management Analysis

Following the identification of types of risk, each risk type was assessed by its probability of occurrence and impact by the Rapid Agriculture Risk Assessment approach. Using a scale of 1 to 5, the cross-tabulation of risk probability and impact produced the expected loss ranking matrix. As a note, the values of risk probability and impact were the mode (i.e., the most frequently appearing values) of all of the interviewed respondents. As presented in Table 3, each supply-chain actor owns different code which are farmers use F, middlemen P, suppliersT, and florists FL. The matrix was divided into three categories of losses including low, medium and high losses. Based on the matrix, risks with high losses category were all borne by farmers (Table 4). Those of the medium and low risks were more equally distributed among farmers, middlemen, suppliers, and florists. High-losses risks included damaged greenhouse, pests and plant diseases, and low selling prices at the farmer level.

The risk of damaged greenhouse (F1) is considered to incur high losses (Table 4), since it leads to other risks such as the damaged flower plants and also more prone to pests and plant diseases attack. Consequently, it may further cause declining harvest quantity and quality of the flowers. In terms of losses due to harvest failure or declining harvest quantity, damaged greenhouse also incurs unexpected cost for greenhouse construction (if the greenhouse is collapsed) and or more pesticide costs. Leaf rust (F2) and pest infestation, such as whitefly (F4) and thrips (F7), also cause high losses (Table 4). Although having different effect on the chrysanthemum plants, they similarly reduce the flowers' physical quality. Puccinia horiana causing leaf rust creates white pimples on the lower leaves or pale indentations which reduces the quality of chrysanthemums (H. Hanudin et al., 2015). Pucciana horiana disease is triggered by high humidity accompanied by lower air temperatures (Suhardi, 2009). Meanwhile, whitefly (*Bemica tabaci*) brings in black spots on the chrysanthemum leaves, and thrips pests cause the flowers to turn brown, the leaves wrinkled, curled, and curved upward.

Table 4. Expected Loss Ranking Matrix

Probability	1		F6	F7,F10		
	2		F5	F2,F4	F1	
	3	T2	F9,FL2	P2,FL3		
	4	P4	F3,F8,P1,P3,T1,T3,FL1,FL4	T5	T4	
	5					
		1	2	3	4	5
		Risk Impact				

Source: (Data analysis, 2019)

Information: F = risks at the farmers level; P = risks at the middlemen level; T = risks at the suppliers level; FL = risks at florists level

Farmers stated that these pests are mainly problematic because they are hard to eradicate and quickly spread. Thrips eat developing tissue leads to growth damage including distortion, reduction in plant growth, and eventually yields loss (Leiss et al., 2009).

Another risk that imposes high losses is low selling price in the market (F10) (Table 4). Arumugam et al., (2010) argued that market stability is a risk event which is quite burdening for farmers.With fluctuative demand throughout the year, farmers cannot expect price stability. Instead, there are months when selling price becomes very low.

Risk events are classified as priority 2, which means they have moderate losses, plants attacked by aphids (F5) and caterpillar (F6) at farmers level, unsold flowers (P2) at the middlemen, mixed low- and high quality flowers in packaging (T4) of the supplier agent and the flowers wither quickly (T5, FL3) at the supplier and florist levels (Table 4). The risk of pest infestation as aphids (F5) and caterpillar (F6) have a different physical impact. Aphids (F5) have an impact on causing the leaves to turn brown, the leaf structure destroyed, the dwarf plant undeveloped, and the leaves twisted downward. Caterpillar (F6) eat leaves and flowers on chrysanthemum plants. Both of these pests have a moderate-loss impact. It is because the presence of these pests is easily encountered.

Unsold interest (P2) that occurs at the level of the middleman agent is considered to have moderate losses because the supply chain actors still purchase all the flowers from farmers, both grade A/B/C quality when demand is high or low. When demand is low, the middleman agent has difficulty selling the interest, hence, the impact on losses is moderate. Flowers wither quickly (T5, FL3) at supplier and florist level (Table 4), as what happened with the previous supply chain actors that chrysanthemums generally have a short life vase. Storage temperatures which are too high can also cause flowers to wither quickly (Sajid et al., 2018). It has an impact on the traders experiencing losses.

Mixed low-and high quality flowers in packaging (T4) at supplier level has moderate loss rates (Table 4). It is due to the fact that supplier agents have not yet been re-sorted before the interest is supplied to florists, distributions that require a long time, and temperature changes. Arriving flowers in a healthy flower florist has already been infected with flowers attacked by pests and diseases. Hence, the selling price of flowers is low.

Vulnerability risk matrix divides the 23 risk types into four categories of vulnerability level which are high, medium, low and limited vulnerability (Table 5). Occurrence of risks that fall into the category of high vulnerability occurs at the farmers level including damaged greenhouses, plants affected by leaf rust, thrips pests, whitefly, and low selling prices in the market. According to the experts, the risk management capacity performed for each risk event is considered effective but not yet affordable and sustainable, while the risk eventspotentially induce high losses.

Table 5. Vulnerability Risk Matrix

	Capacity to Manage Risk				
Loss Ranking	1	2	3	4	5
Priority 1			F1,F2,F4,F7,F10		
Priority 2			F5,F6,T5,FL3		P2,T4
Priority 3			F3,F8,F9,P1,T1,T3,FL1,FL4	P4,FL2	P3,T2

Source: (Data analysis, 2019)

A damaged greenhouse (F1) is in the category of a risk of high vulnerability but with low to moderate risk management capacity (Table 5). Farmers have attempted to cope with the damaged greenhouses, but the effort is yet affordable and sustainable. It is because only about 40% of the chrysanthemum growers attempt to do something (e.g., add bamboo poles following the damaged of their greenhouses), while many more, or 60% of the growers, do nothing to cope with it. Furthermore, from 40% of farmers who give additional bamboo poles, only 10% of whom replaces the greenhouses'covers, while the majority do not. As a matter of fact, the state of the greenhouse is considered very essential in chrysanthemum farming. In addition to provide and support an area for growth, greenhouse is also an asset for the farmers (Hayati et al., 2019).

Pests and diseases attacks (F2, F4, F7) are other risks with high vulnerability categories (Table 5). Regarding farmers' risk management capacity in overcoming them, plants affected by pests and diseases are considered effective but not yet affordable and sustainable. The way the farmers put the plant bed that is parallel to each other, and in which each bed may contain plants with different growth phase, contributes to the more prone pest attack. Pests easily jump from one bed to another, further damage plants of different ages.

Low selling price in the market (F10) is another high vulnerability category (Table 5), in which the risk management capacity is considered effective but not yet affordable and sustainable. In terms of selling price, farmers do not possess bargaining power but are merely price takers. Although there is a farmers group, it does not take any effort to improve farmers' bargaining power. Hence, farmers have no power over the instability of flowers' selling price (Hayati et al., 2019). It emphasizes the previous study arguing that farmers are the weakest actors regarding bargaining power in the supply chain of agricultural products (Astuti et al., 2013).

Based on resultsin the vulnerability risk matrix (Table 5), supply chain actors are included in moderate vulnerability borne by farmer, middlemen, and florist level. Meanwhile, low vulnerability category was borne by farmer, middlemen, supplier and florist, and limited vulnerability was borne by middlemen, supplier, and florist level.

Identification of Risk Priority

Based on the results of the study, risk priorities were formulated based on risk which have a high level of risk

(priority 1), high vulnerability and have a higher score (Table 4). Consisting of damaged green houses, selling prices of flowers at the farmer's level are low, plants were affected by leaf rust, thirps pests and whitefly. Many research result explain that selling price risk is perceived as highly important and causes high losses (Jankelova et al., 2017) (Muchfirodin et al., 2015), while natural disaster is the biggest risk in the agricultural sector (Laczynski de Souza et al., 2015). Basically, the risks in the agriculture sector influence and interact (Girdžiūtė, 2012). In the rainy season (October-December), there are often strong winds accompanied by heavy rains. Meanwhile, most farmers in Bandungan do not maintain greenhouses, thus, when the rainy season comes, many of the greenhouses are damaged. The climate factor during the rainy season also results in the increased number of adverse pest and disease attacking Chrysanthemum (Rahayu et al., 2020) (Barhate et al., 2015). Humidity in Bandungan sub-district in the rainy season reaches 90%. Meanwhile, the maximum incidence and intensity of chrysanthemum leaf rust disease was observed at 25-27°C temperature and high relative humidity of 85-90 % in the protected condition, while, in case of non protected condition, no infection occurred due to high temperature and low humidity (Yusuf et al., 2017).

Table 6. Chrysanthemum Flower Supply Chain Risk Evaluation

Code	Rank	Risk Incident	Category		Score			Total
			Expected Loss	Vulnerability	P	D	C	Score
P4	23	Flower wither quickly	Low	Limited	2	1	4	0,5
T2	22	Unsold interst	Low	Limited	3	1	5	0,6
P3	21	Mixed low-highquality flowers in packaging	Low	Limited	2	2	5	0,8
P1	20	Unpaid receivables	Low	Low	2	2	3	1,3
FL4	19	Low quality flowers	Low	Low	2	2	3	1,3
FL1	18	Unsold Flowers	Low	Low	2	2	3	1,3
T3	17	Stolen flowers	Low	Low	2	2	3	1,3
T1	16	Unpaid receivables	Low	Low	2	2	3	1,3
F8	15	Red mites	Low	Low	2	2	3	1,3
F3	14	Stem rot	Low	Low	2	2	3	1,3
FL2	13	Difficulties in finding suppliers	Low	Limited	3	2	4	1,5
T4	12	Mixed low-high quality flowers in packaging	Moderate	Limited	2	4	5	1,6
P2	11	Unsold interest	Moderate	Limited	3	3	5	1,8
F9	10	Borer	Low	Low	3	2	3	2
T5	9	Flower wither quickly	Moderate	Moderate	2	3	3	2
F5	8	Aphids	Moderate	Moderate	4	2	3	2,6
FL3	7	Flower wither quickly	Moderate	Moderate	3	3	3	3
F6	6	Caterpillar	Moderate	Moderate	5	2	3	3,3
F4	5	Whitefly	High	High	4	3	3	4
F2	4	Leaf rust	High	High	4	3	3	4
F7	3	Thrips sp.	High	High	5	3	3	5
F10	2	Low selling price	High	High	5	3	3	5
F1	1	Damaged greenhouse	High	High	4	4	3	5,3

Source: (Processed data, 2019)

Notes: P = Probability; D = Impact; C = Risk management capacity

CONCLUSION AND SUGGESTION

This study found that there are 6 sources of risk and 23 risk events presented in the chrysanthemum supply chain. The six sources of risk in the chrysanthemum supply chain consist of those related to weather, natural hazards, plant biological and environmental factors, management and operations, logistics and infrastructure, and market-related risks. The highest risk is at the farmer level. Risk events included in the category of high losses and high vulnerabilities consist of damaged green house, low level of selling price at the farmers, plants affected by thrips, leaf rust disease, and whitefly pests.

Based on the results of this study, greenhouse is a very important means of production and asset for the farmers yet easily broken down. There is a need of an innovation in the greenhouse construction with quality and sturdy materials which are affordable for farmers. A suggestion, for instance, is to replace bamboo-made poles with lightweight-steel poles. In accordance with recurrent low selling price, farmers group needs to be strenthened, especially regarding its institutional role to promote collective marketing for all of its small-scale member farmers. It expectedly will improve farmers' bargaining power in terms of price. Lastly, it is also necessary for farmers to improve the way they farm chrysanthemum, in order to lessen the possibility of pest and disease attack as well as to increase the flowers' production quantity and quality. Some practical advices include regular soil cultivation, provide the appropriate amount of fertilizer and pesticide at the right times along the stage of growth, and or take the advantage of biological control in the greenhouse.

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