



Analysis Of New Superior Varieties Production (VUB) Of Chrysants (*Chrysanthemum Sp*) Of The Ornamental Plants Research Institute In Sulawesi Utara, Indonesia

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I. INTRODUCTION

Ornamental plants have become popular from the bottom to the middle-up class of society, where the intended of use is also different. There are only to green the house and others to raise the prestige. Ornamenting the house using the ornamental plants is a kind of the hobbies of the economically middle-up class people. Thus, the consumers who need even ornamental plants have increased as well (Permana, et al, 2013).

Cut flowers are flowers used as the materials of flower arrangements for many purposes in human life, from births, marriages and deaths. Nowadays, the cultivation of flowers is growing along with the increasing demand for cut flowers and flower arrangements, especially in urban areas. Chrysanthemum is one of the commercial cut flowers in Indonesia (Daryono and Rahmadani, 2009).

Chrysanth (Chrysanthemum sp.) is included into horticulture sub-sector that has high economic value and good prospect. In addition, since it is one of the excellent cut flowers, chrysanth are universal, means that chrysants are interested by all classes of society. Chrysants are varied, both in terms of form and color. In addition to the extensive utilization, chrysants can be used as the primary flowers in flower arrangements, besides, chrysants have longer durability.

Indonesia is an important supplier of cut flowers, especially for chrysanth which is not only for the domestic market, but also for the overseas one such as Japan and the Middle East. In addition, the demands over it also came from Germany, Britain, Switzerland, Italy, Austria, USA and Sweden). Japan, demands it more than to the others. The suppliers for overseas market today are not only Indonesia, but also the other developing countries such as Columbia, Zimbabwe and South Africa (Anonymous, 2009; Auni *et al.* 2002; Ridwan *et al.*, 2005).

The major suppliers of Chrysants in Indonesia are West Java, Central Java, East Java, West Sumatra, South Sumatra and North Sulawesi. North Sulawesi is one of the flowers producer regions including the chrysanth and it also becomes a supplier for the domestic and regional markets of Eastern Indonesia. Tomohon is the largest producer of chrysanth in the province. The geographical condition of Tomohon, which has the active Mount Lokon, is located on 600-800 MASL (the suited growing conditions of 600-1200 MASL), making these plants lush and quickly adapt to an environment that supports the development of cultivation. The condition of natural resources supports the residents to cultivate various types of flowers, including chrysanth since a long time ago. The local varieties which are still available nowadays are Riri Chrysanth (yellow Chrysanth) and Kulo Chrysanth (white chrysanth).

There are many National and International level tournaments held incorporating the theme of flower. Those were held on 2008, 2010 of ToFF (*Tournament of Flower Festifal*) and on 2012 and 2014 of TIFF (*Tomohon International Flower Festival*). Those activities affected the horticulture farmers' interests to cultivate varied types of flowers which are used in many tournaments, especially for chrysanth. In addition to the official and conditioned moments, the cut flowers are also interested by many consumers (individuals – groups) ia any times either domestically or inter-provinces.

Considering the potential of nature, the interest of farmers and the market demand for cut flowers, especially for chrysanth, the Local and the Central Government support it through the policy support in developing this commodity. Local Government in addition to help from the formation of 24 farmers group and other aid, especially for the implementation of ToFF and TIFF, while the Central Government helped through Agricultural Research and Development Institution. It is because the Institution for Agricultural Research has an

important role in generating specific agricultural innovations to encourage more strategic role of agriculture and accelerate the achievement of four successful agricultural development, i.e.: (i) The achievement of self-sufficiency and sustainable self-sufficiency, (ii) Increased the diversification, (iii) Increasing the value added, competitiveness and exports, and (iv) Improved the welfare of farmers. Through Ornamental Crops Research Institute (Balithi) there are performances of 21 varieties of Chrysanthemum Technology degree in Tomohon in 2012. This activity is integrated with the Institute for Agricultural Technology (BPTP) of North Sulawesi that has a strategic role in conducting the assessment and development of site-specific of agricultural innovation with the assistance of technology.

Referring to the integrated activities of the Institute of Agricultural Research and Development, i.e., Balithi as the producer of technology and BPTP of North Sulawesi as the assessor of the results of the research of the research center, they conducted a cooperation with the Department of Agriculture, Farm and Ranch of Tomohon to see how far the application of the VUB chrysants at the farm level. It is seen from the side of the production at the farm level should be cultivated because of the interest of consumer demand. As it was stated in Stenckamp & van Trijp (1988), the interest of consumers is an important aspect that must be considered in product development.

II. LITERATURE REVIEW

According to Sumarno (2004), industrial plants are fashion plants businesses. The consumers' tastes will determine the desired type of the market. The interest of consumers is an important aspect that must be considered in the development of the products, because the consumers will decide which product to buy and how quality can meet the expectations of the consumers (Stenckamp & van Trijp, 1988).

The prospect of Agribusiness of cut flowers is fairly bright along with the increasing market demand for cut flowers, both from the country and overseas market. The increasing demand for cut flowers is influenced by the returns of Indonesian tourism sector after a long decline due to internal security factor in Indonesia.

Chrysanthemum is a cut flower that has a big opportunity to be developed. The diversity of varieties can be correlated positively to the high level of consumer as colorful and beautiful shape owned by this kind of cut flowers. Therefore, the chrysanthemum is one of the leading commodities that its development is being promoted by the Government. Fluctuating consumer demand for domestic chrysanthemum depends on the size of the demand for party decorations, office, household, boards congratulations and grief, etc.

The requirements in growing the chrysants are: (1) grows well at the altitude of 600-1200 MASL (medium-high plateau); (2) optimal growing medium with density types of 0.2-0.8 g / cm³ (dry weight), total porosity of 50-75%, water content of 50-70%, the content of the air in the pores of 10-20%, the dissolved salt content of 1-1.25 dS / m, and a pH range of about 5.5-6.5; (3) daily temperature range of 17 °C - 30 °C (in the vegetative phase daytime temperature of 22 °C - 28 °C and a night temperature of not more than 26 °C; the generative phase, the ideal daily temperature: 16 °C - 18 °C); (4) the beginning of the growth of air humidity: 90-95% and in the adult plants: 70-85% (Sulyo and Budiarto, 2008). Meanwhile, according to Masyhudi and Suhardi (2009), chrysants can be thrived, produced well, and protected from pests and diseases because chrysants are grown in a shade house and given a UV plastic gauze wall / paranet 55%. Nevertheless, although these requirements are often fulfilled, there are still found obstacles or problems in chrysanthemum cultivation.

The cultivars of chrysants cultivated nowadays are coming from the introduction varieties and the results of crossbreeding within the country (Badriah and Sanjaya, 1995 in Wasito and Komar, 2004). In order to respond the market demand, there are many new varieties resulted from the crossbreeding within the country, both in the type of spray and of standard one. (Prabawati *et al*, 2002). The Ornamental Crops Research Center also produces some varieties which have some advanced characteristics in its types and colors, also its tenacity over the pests and rust disease. Those varieties are: Saraswati, Sekartaji, Purbasari, Retno Dumilah, Kartini, Chandra Kirana and Larasati (Marwoto *et al*, 1999). There were 20 cultivars released on 2010 as a result of the crossbreeding of the Ornamental Crops Research Center, such as: Sakuntala (Yellow), Cintamani (Yellow), Kusumasakti (Brown), Kusumaswasti (Purple), Kusumapatria (White), Mustika Kania (Pink) of the standard type and Asmarandana (Light Red), Cut Nyak Din (White), Candra Kirana (Dark Purple), Dewi Ratih (Light Purple), Dwina Pelangi (Tip=White, Center=Purple), Dwina Kencana (Tip=Yellow, Center=Red), Nyi Ageng Serang (White, Tip=Pink), Padma Buana (Light Red), Paras Ratu (Light Purple), Pasopati (Black Red), Permana (Purple), Pitaloka (Purple), Pramudita (Orange), Purbasari (Yellow), Puspita asri (Purple), Puspita Nusantara (Yellow), Puspita Kencana (Yellow), Puspita Pelangi (White), Puspa Kayani (Dark Yellow), Raspati Merba (Orange), Raspati Orange (Orange), Ratna Hapsari (Red), Ratna Wisesa (Black Red), Sasikirana (White), Swarna Kencana (Orange Yellow), Tiara Salila (Red White), Tirta Ayuni (A little bit peachy White) and Wastu Kania (White) of the spray type.

III. RESEARCH METHODOLOGY

The research was conducted on the period of January-December 2014. It was located on a plateau Agroecosystem which is the production center of Chrysanth in Tomohon, North Sulawesi. It was chosen considerably as the location of research by considering its function as the cultivation center of chrysanth in Indonesia and it has a stable market within the country. The data used as the discussion on this review are the secondary and primary data. The secondary data collected including the price development, and also the data related to the purpose of the research. The secondary data is coming from the reports and publications in the Horticulture Research and Development Center, General Directorate of Horticulture Crops, BPTP, Technical Official, other related institutions, results of researches, etc. Meanwhile, the primary data collected including the respondents' identities, cropping pattern, varieties used, the amount of seeds and its price, the amount of pesticide and its price, inorganic fertilizer and its price, organic fertilizer and its price, workers and its salary, the amount of production and its price, and also the analysis of farmers' business. The survey was conducted to 30 respondents (farmers) who planted the chrysants of Ornamental Crops Research Center and other varieties as a comparison to observe the use of production factors and 23 (out of 30 respondents who specialized cropping the chrysants of Ornamental Crops Research Center) to analyze the advance of the standard and spray types. The quantitative analysis used was the analysis to look at the economic feasibility of farming, which used the method of input-output analysis (Price, 1972). The method included net income of farm chrysanth and its feasibility by using B and C ratio. In the production aspect, it used a Liker Scale to measure the excellence of the standard and spray types of chrysanth of In the aspect of production in which to measure the excellence and spray chrysanth standard type of Ornamental Crops Research Institute (Balithi) (Riduwan and Sunarto, 2007). The variables are then translated into measurable indicators which are translated into a list of questions that can be answered by the respondents who are the chrysanth farmers.

IV. RESULT AND DISCUSSION

4.1. Cropping Pattern.

Generally, the flowers farmers in this city have a whole year cropping pattern with many kinds of flowers in a shade house, at most of 3MT/year. The period of the most cropping is suited to the religious holidays (January cropping for Easter harvest (ranging on March/April); March/April cropping for the Thanksgiving in Minahasa-Tomohon (harvesting on about July/August); also the September cropping for the Christmas-New Year harvest in December. The farmers who have more than one shade house are usually cultivating the flowers intermittently by regulating the cropping period in order to be able to be harvested any time.

4.2. Variety

Local varieties of Chrysanth which consists of Riri (yellow chrysanth) and Kulo (white chrysanth), both are the standard types, the types that have been developed. Chrysanth have adapted very well at this location. Some farmers feel easy in cultivation since they have tried for a long time. However, since earlier of 2000, the varieties derived from the flower companies in West Java and East Java and Balithi of Agricultural Research and Development began to be known and developed by the farmers. Variations in color, type and size make the chrysanth are accepted and developed until now. Therefore, the development of the varieties of Balithi and the companies just increased the interests of the farmers in developing them intensively. Local varieties are preserved to be developed along with the introduced varieties.

Table 1. VUB Balithi cultivated at the Farmers in Tomohon, 2014.

Varieties	Spray Type		Standard Type		
	Colour	The Number Of Farmers Planting	Varieties	Colour	The Number Of Farmers Planting
21 VUB Who Introduced Balithi In Technology Degree In 2012:					
Asmaranda	Pink	4	Sakuntala	Yellow	13
Puspita Nusantara	Yellow	16	Kusumapatria	White	6
Dewi Ratih	Violet	3	Mustika Kania	Pink	8
Dwina Pelangi	End:White, Middle: Purple	6	Kusumaswasti	Purple	-
Dwina Kencana	End:Yellow, Middle: Red	2			
Raspati Merba	Orange	3			

Spray Type		Standard Type	
Raspati Orange	Orange	2	
Ratna Hapsari	Red	1	
Ratna Wisesa	Burgundy	2	
Puspa Kayani	Old Yellow	1	
Paras Ratu	Violet	-	
Tiara Salila	White Reddish	2	
Swarna Kencana	Yellow Orange		
Puspita Asri	Purple	1	
Wastu Kania	White	3	
Varieties Balithi Beyond Technology degree 21 VUB			
Cut Nyak Dien	White	8	Cintamani Yellow 4
Dewi Sartika	Pink	1	
Chandra Kirana	Purple	2	
Puspita Kencana	Yellow	4	
Pramudita	Orange	1	
Purbasari	Yellow		
Pitaloka	Purple	1	
Puspita Kencana	Yellow	4	
Sasikirana	White	1	
Purbasari	Yellow	3	

Source: Primary Data, 2014.

The results of the survey in Table 1, show that the interest in cultivating VUB of Balithi is very high. Both types of standard and spray very interested the farmers. However, the variety of Puspita Nusantara is more interested by farmers since it is easily rooted and resistant to the pests. When the was being conducted, unfortunately, there are many farmers who did not know the exact name of the varieties compared to local the varieties available. In fact, after further analysis, VUB of Balithi been widely cultivated as it seen in Table 1. The name of the Chrysanth varieties that are not much known at the level of farmers: 60%, Level of Florist / Dealer: 80%, and the Consumer Level: 95%. Furthermore, after being given an explanation of the origin of the name and the varieties grown, they conducted an analysis of the advantages especially for chrysanth of. The excellence of the Ornamental Crops Research Institute VUB is needed to be known for its interpretation criteria at the farm level. The following discussion will look at the results of calculation criteria of both types of spray and standards.

Results of analysis of the advantages VUB Likert Chrysanthemum Balithi by type with n = 23, with a score interpretation criteria are as follows:

1. Score 0 % - 14,28 %	= Very Not Excel At All
2. Score 14,29 % - 28,56 %	= Very Superior
3. Score 28,57 % - 42,85 %	= Not Superior
4. Score 42,86 % - 57,14 %	= Neutral
5. Score 57,15 % - 71,43 %	= Superior
6. Score 71,44 % - 85,72 %	= Very Winning
7. Score 85,73 % - 100 %	= Very Winning Once

Table 2. Results Of Likert Scale Analysis Excellence Chrysanthemum Spray Type Balithi, 2014.

Attribute	Category	Value (%)	Rating
1. Stainless	Very Winning Once	89.44	I
2. Bright Colors	Very Winning	75.16	II
3. Rigid Stalk	Superior	63.98	IV
4. Large Diameter	Superior	67.70	III
5. Long Stalk	Neutral	46.58	V
6. Resilience > 7 Days	Not Superior	37.89	VI
7. Others: Lots Of Buds	Very Superior	19.25	VII

Source: Primary Data, Processed, 2014.

The results of Likert analysis on the Spray type of Balithi shows that the varieties which resist to the pests/diseases becomes an important factor. Basically, the attacked crops by the pests/diseases, especially for Trips pest and rust disease can reduce the production. The farmers advance the spray type of some of chrysants VUB such as Puspa Kayani, Dwina Kencana, Sasikirana, Puspita Asri since they are resist to the rust disease. The bright color is the second excellence since the most sold flowers are based on its bright color. There are many Balithi VUB which have this excellence. The farmers tend to demand the spray type varieties which they cropped which have fairly big diameter, whereas it produces many flower buds in every tree. It is different with the standard one which only has 1 flower, which makes it to have an average diameter bigger than the spray one. By having a tough stalks becomes farmers' option in choosing varieties that will be planted, it is ranked 4th. Kink stalk can help vase life length as it desired by the florist / traders as consumers of farmers.

Next is the analysis of the standard type of Balithi Chrysanthus VUB on the farmers level. For more details, it can be seen in Table 3.

Attribute	Category	Value (%)	Rating
1. Stainless	Very Winning	83.43	I
2. Bright Colors	Very Winning	78.86	II
3. Rigid Stalk	Superior	70.29	III
4. Large Diameter	Superior	65.71	IV
5. Long Stalk	Neutral	48.00	V
6. Resilience > 7 Days	Not Superior	39.43	VI
7. Others	Very Superior	15.53	VII

Source: Primary Data, Processed, 2014.

As well as the spray type, Balithi VUB also in the Standard type are more preferred because many of them are resistant to corrosion. Of the five Balithi VUB standard type planted, three of them are Cintamani, Kusumaswati, Santa Kusumapatria are preferred because they are tolerant to rust disease. The bright color and the rigid stalks seeded from the VUB. At the third rank, the farmers are able to get the standard type varieties should have a rigid stalk because of the flowers produced. Although it has only one bud, it has a large diameter which means that it is having enough weight.

The resistance of the flower is not favored on the farmers level because it depends on the age of the harvest, which means that the farmers will try to sell all of the chrysanthus if the time has come. Usually, the vase life becomes an important factor when the flowers have been harvested and are in the hands of florists / traders or final consumers. There are many chrysanthus of Balithi VUB which had have vase life of 14 days.

The Chrysanthus variety outside of Balithi is still cultivated intensively by the farmers. The data on Table 4 is able to be studied by its amount and type of the flowers which are still being tried.

Table 4. The Chrysanthus varieties outside of Balithi cultivated by the Farmers in Tomohon, 2014.

Varieties	Colour	The number of farmers planting	Varieties	Colour	The number of farmers planting
Local Varieties					
			Riri	Yellow	12
			Kulo	White	13
Introductions varieties Flower Company (Cipanas and Malang)					
Reagen White	White	5	Fiji Yellow	Yellow	12
Reagen Yellow	Yellow	3	Fiji White	White	11
Puma White	White	4	Fiji Pink	Pink	4
Puma Yellow	Yellow	3	Fiji Dark	Purple	4
Puma Red	Red	1	Jaguar Red	Red	7
Stankon	Yellow	4	Jaguar	Purple	2
Rino	White	1	Anastasya	Green	1
Remix	Red - Yellow	6			
Remix	White -Pink	1			
Monalisa	White	1			
Euro White	White	6			
Euro Yellow	Yellow	1			

Varieties	Colour	The number of farmers planting	Varieties	Colour	The number of farmers planting
Bakondi	White	1			
Jokooni	Green Pimpong	2			
Monto	Orange	2			

Source: Primary Data, 2014.

The data in Table 4 shows that farmers in this city like a lot of varieties of the varieties to be cultivated. The local varieties, Riri and Kulo, are still maintained. The seriousness of farmers to develop, makes the local government of Tomohon tried these two varieties recognized by launching them in Tomohon International Flower Festival (TIFF) in 2012. The development is continued on the farmers level against the company introduced varieties although the seed is no longer gotten directly from the company.

4.3. Seed and its Price.

In the spray type, the most used seed is cuttings because they have rooted and equitable growth. For farmers, who cropped the seeds of a standard type, used the seeds in the form of seedlings. Usually, cuttings / seedlings were used in 5-10 cm tall and has leaves for 5-6 strands. Generally, before being cropped, the seeds are sorted by choosing crops that are not damaged, especially on the leaves and stems, then treated by soaking in fungicide, such as Dithane. Seed source is coming from three (3) breeder farmers in this area. Currently, farmers have reduced the purchase of seeds sent from Java with reasons that the seeds were damaged once in the hands of farmers. The selling price of seeds is Rp. 500/cuttings at the farmers level.

4.4. Organic Fertilizer and its Price.

Chicken manure is used by farmers with varied applications. For example, in the area of 200 m², the farmers using 1200 kg; in the area of 360 m² using 600 kg, 240 kg used in 125 m² area, and the area of 120 m² using 800 kg. So, farmers use manure at a dose of 1.5 to 6.9 kg / m². The price is Rp. 500/kg. Fertilizer is most simply applied as basal fertilizer. In the Supplementary fertilization only few farmers use it. Farmers also use a liquid fertilizer of KN03 where most fertilizer was applied to the first subsequent, for the 2nd and 3rd ones, generally, they do not use organic fertilizers.

4.5. Inorganic Fertilizer and its Price.

Farmers generally use NPK and SP-36 on the base of fertilization. In the first subsequent fertilization, used Urea, SP-36 / Phonska, NPK (mutiara / pelangi), KCl. In the second subsequent, the average of urea / KCl and NPK. The 3rd fertilization is no longer be used by the farmers. The price of NPK Mutiara of Rp. 17,500, NPK Pelangi of Rp. 2,500 / kg, Urea of Rp. 2,500 / kg, SP-36 of Rp. 2,500 / kg. It is generally the same price at the farmers level, because most of them buy it in the market that are relatively close and has very easy access and fast.

4.6. Pesticide.

Agrimex (the most), Confidor, cabrio, Dithane, Antracol, Curacron, decis, tetriso, Reagan, betador, amistarop, score, and many more types of pesticides are known and used by flowers farmers in this city. Pesticides are used generally for the major pests that attack chrysanthemum like Aphids, thrips and leaf miners to which farmers control it by giving the korbufuran while cropping. While Decis, Orthane effectively control pests. For major disease attack is leaf rust caused by Puccinia horiana. The leaf rust is controlled by keeping the environment clean and leaves that have been infected are discarded and then burned. Some fungicides used are score, Dithane, Benlate. As well as the fertilizers, insecticides price is only slightly varied.

4.7. Workers and its Salary.

The balance of the workers in chrysanthus farming occurs in Men and Women. The men generally have a job allocation on land clearing, land preparation, plots establishment, fertilization, and TKLK and mixing, flower net installation, lights installation, and control of pests / diseases. While most of the women are allocated to the component of cropping, watering, seeding, and harvest disbanding / post-harvesting. The Use of Workers in Family (TKDK) and Family Workers Affairs (TKLK) depend on the work situation. However, TKDK of both men and women all almost in all cultivation work allocation. TKLK salary for Men and Women is now the same of Rp. 100.000, - / Day of Work (8 hours).

4.8. Infrastructures and Tools.

On the average, a farmer has one shade house with size is varied according to soil conditions and needs. 1 unit prices ranging from Rp. 15.000.000 - Rp. 35.000,000 according to the size. However, there are farmers who have 2-3 units with sizes varying each other: 8x32 m, 4x20 m, 6x9 m and many other variations. Availability of water is quite good, and to accelerate the watering, the farmers group already has one unit of water pumps. But if there are individual farmers who want to use it, they usually hire it for Rp. 385,000 / MT. Other tools, such as hoes, sprayer, buckets, etc owned by farmers as their own tools. In a shade house, it is usually cropped by various types of chrysanth, even on other beds also many types of roses are cultivated. Farmers tend to plant more than one type of flower, but the average farmers prioritize chrysanth flowers cultivation.

4.9. Harvest/Post-Harvest dan Marketing.

Harvest and Post Harvest are mostly carried out by the buyer (florists, market traders, and consumers). the average of harvest age is 100 days after planting. The farmers and consumers / traders do not concern on the grade, there is only mixed class. They buy / harvest their own desire. Therefore, those were not selected is considered to be unsold.

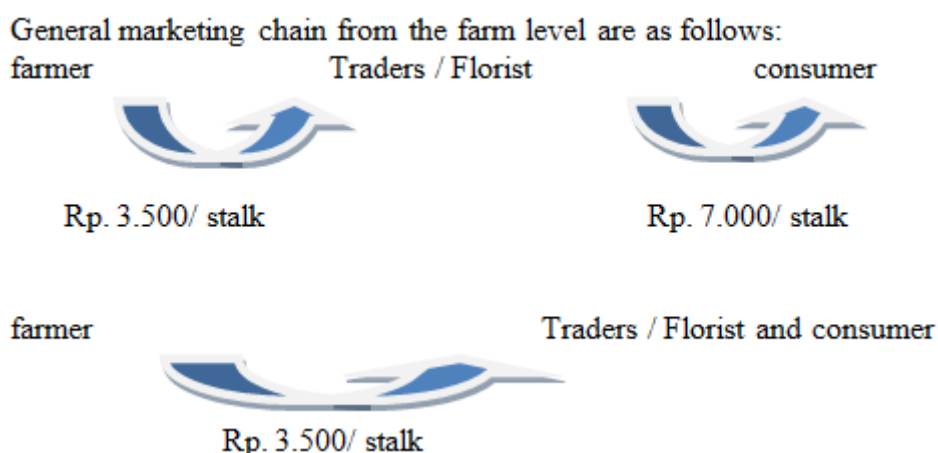


Figure 1. Chrysanthemum marketing chain in Tomohon, 2014.

Generally, the marketing chain from the farm level is as follows: Shown in the marketing chain there are farmers who sell directly to consumers, but there are around 20 stalls which operated by the florists / traders who are still in the same city. However, typically, the consumer given directly to the farmer's permission to buy was a regular customer since the enactment of the provision has not shared Chrysanth Growers Association in Tomohon. Most of the stalls of florists are located along the highway in Tomohon, especially in Kakaskasen village. The other stalls are located in the city, and about 2-3 florists in Manado City.

4.10. Farming Analysis.

The farming analysis is taken from the space of 250 m²/shade house. The space is varied. The income received by the farmers per MT is also affected by the space/numbers of shed house owned besides the cost factor spent and the selling price. The farming analysis of the Chrysanth farmers can be learned as follows:

Table 6. Analysis of Chrysanthemum farm in Tomohon, North Sulawesi, 2014.

No	Commentary	unit	Volume	Unit Price (Rp)	Total (Rp)
A. COST OF PRODUCTION (OUT PUT) :					
I. Variable costs (variable) :					
(a). Cost of Production Facility:					
1.	Chrysanthemum seedling	tree	19.000	500	9.500.000
2.	Manure	Kg	540	500	270.000
3.	Fertilizer SP 36	Kg	18	2.500	45.000
4.	Fertilizer NPK Mutiara	Kg	9	17.500	157.500
5.	Fertilizer NPK Phonska	Kg	18	2.700	48.600
6.	Acaricides (Furadan)	Kg	9	17.500	157.500
7.	Fertilizer KNO ³	Kg	3	50.000	150.000

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No	Commentary	unit	Volume	Unit Price (Rp)	Total (Rp)
8.	Pesticide				
	<i>a. Confidor</i>	MI	300	750	225.000
	<i>b. Cabrio</i>	MI	300	750	225.000
	<i>c. Agrimex</i>	MI	300	750	225.000
	<i>d. Antracol 70 WP / Dithane M45</i>	Kg	1	60.000	60.000
					Total (a)
					11.063.600
(b).	Labor Costs:				
1.	cleaning Land	HOK-P	2	100.000	200.000
2.	Land Management	HOK-P	2	100.000	200.000
3.	Making Beds	HOK-P	3	100.000	300.000
4.	Basic Fertilization and Mixing	HOK-P	4	100.000	400.000
5.	Installation Flower Net	HOK-P	1	100.000	100.000
6.	Installation Lights	HOK-P	2	150.000	300.000
7.	Sprinkling	HOK-W	8	100.000	800.000
8.	Cultivation	HOK-W	4	100.000	400.000
9.	Weeding	HOK-W	6	100.000	600.000
10.	Disbunding	HOK-W	4	100.000	400.000
11.	Perompesan Old Leaves (Senences)	HOK-W	3	100.000	300.000
12.	Pest and Disease	HOK-P	4	100.000	400.000
					Total (b)
					4.400.000
					Total I = (a) + (b)
					15.463.600
II.	Fixed Costs:				
1.	ground rent (<i>Rp. 600.000 : 3 MT</i>)	MT	1	200.000	200.000
2.	Electricity	month	2	150.000	300.000
3.	Rental Green House (<i>rental Use: Rp. 70.000.000 : 12 MT = Rp. 5.833.000</i>)	MT	1	5.833.000	5.833.000
4.	Electrical Installation (<i>rental Use: Rp. 3.000.000 : 8 Mt = Rp. 385.000</i>)	MT	1	385.000	385.000
5.	Scissors	piece	4	40.000	160.000
6.	Gembor	piece	2	70.000	140.000
7.	Flower Net	Metre	180	25.000	
8.	Hand Sprayer (<i>rental Use: Rp. 450.000 : 6 Mt = Rp. 75.000</i>)	MT	1	75.000	75.000
9.	Timer	piece	2	60.000	120.000
10.	Water Hose (<i>rental Use: Rp. 600.000 : 6 Mt = Rp. 100.000</i>)	MT	1	100.000	100.000
11.	Water Pump (<i>rental Use: Rp. 3.000.000 : 8 = Rp. 385.000</i>)	MT	1	385.000	385.000
					Total II
					7.698.000
					Total (I + II)
					23.161.600
	B. ACCEPTANCE (INPUT) :				
	Production Chrysanthemum 250 M ² (<i>19.000 x 10 Mortalitas %</i>): 17.100 Tangkai.				
	17.100 stalk x Rp. 3.500,-				59.850.000
	Net profits = (Rp. 59.850.000 - Rp. 23.161.600,-)				36.688.400
	C. MERCHANTIBILITY				
	<i>B/C</i>				1.58
	<i>R/C</i>				2.58
	<i>BEP Production Volume (stalk): TC/ Selling price per stalk</i>				6.618
	<i>BEP Production prices (Rp / stalk): TC/Jthe number of sales stalk</i>				1.355

Source: Adapted from the primary data, 2014.

The results of farming analysis on Table 6, shows that the chrysanth cultivation is worthy since it is profitable. It is shown by $B/C > 1$ and $R/C > 2$ and the calculation of Production Volume BEP shows that this business is profitable since the business will reach the BEP on the sale of 6.618 cuttings, while the sale is on 17.100 cuttings; and the Production cost BEP of this business will reach its BEP on the price of Rp. 1.355/cuttings while the sale is on the price of Rp. 3.500/cuttings.

Looking at the results achieved by the Chrysanth farmers above, means that for a business in a space of 250 m² with 19.000 crops, it would be Rp. 36.688.400/4 months nurturing, with the profit as the family living costs of Rp. 9.172.100/month. We can imagine the income of the farmers who had a business either their own business or rented business of more than a shed house or more than the size above. The fairly high chrysanth farmers' interest in developing this business for the receivable nett profit. Therefore, for example, there is a farmer who quit from his job as a Civil Servant (PNS) (when the institutions had been remunerated) and a farmer who had closed her 4 (four) salons only for allocating all of the time to be a flower farmer and now the farmer is already able to show her work by achieving a national level achievement.

V. CONCLUSIONS

Based on the analysis result, the conclusion of this study are (1) The Balithi VUB is still being the advanced variety by the farmer because 76,67% of the respondents cultivate the spray tipe and 83,33% of the respondents cultivate the standard one. It is caused by the Balithi VUB has its excellences such as more rust resist, brighter color, and more rigid stalks than the other varieties. (2) The high use of production inputs (fertilizers, pesticides, workers, etc.) in the form of costs for chrysanth cultivation. It is fairly significant with their results accepted as it is coming from financial analysis of $B/C > 1$ dan $R/C > 2$, also the calculation of Production Volume BEP and Production Cost BEP which shows that this business is profitable. (3) The role of Agricultural Research and Development towards the result of agriculture which found many Chrysanth VUB which are demanded by the farmers are not much known by the society. Therefore, it needs to be socialized.

REFERENCES

- [1]. Anonymous, 2009. Bunga Krisan Potensi untuk Menjadi Komoditas Ekspor. (In Indonesian) <http://bisnisukm.com/wp-content/uploads/2009/05/bunga-potong-krisan.jpg>
- [2]. Auni, H. N., M.N. Latifah, and M.A. Khairol. 2002. The Prospect of Japanese Flower Market and The Potential of Exporting Malaysian Cut Chrysanthemums by Sea Shipment. International Symposium on Greenhouses, Environmental Controls and In-house Mechanization for Crop Production in the Tropics and Sub-Tropics. ISHS Acta Horticulturae 710. http://www.actahort.org/books/710/710_65.htm. 23 Februari 2011.
- [3]. Daryono Budi Setiadi dan Wenny Deishinta Rahmadani, 2009. (In Indonesian) Karakter Fenotipe Tanaman Krisan (*Dendranthema Grandiflorum*) Kultivar *Big Yellow* Hasil Perlakuan Kolkisin. *Jurnal Agrotropika* 14(1): 15 - 18, Januari - Juni 2009.
- [4]. Marwoto, B, Toto Sutater dan J de Jong. 1999. Varietas baru krisan spray. (In Indonesian) *J. Hort.* 9(3): 275-281.
- [5]. Masyhudi, M. H. dan Suhardi. 2009. Adaptasi agronomis dan kelayakan finansial usahatani krisan di daerah Yogyakarta. (In Indonesian) *J. Hort.* 19(2): 228-236.
- [6]. Permana I Made Riyan, I Ketut Suamba, Putu Udayani Wijayanti, 2013. Bauran Pemasaran Bunga Krisan pada Kelompok Usaha Bersama Manik Mekar Nadi di Desa Besakih, Kecamatan Rendang, Kabupaten Karangasem. (In Indonesian) *E-Jurnal Agribisnis dan Agrowisata* ISSN: 2301-6523 Vol. 2, No. 1, Januari 2013. <http://ojs.unud.ac.id/index.php/JAA>.
- [7]. Prabawati, S. Murtiningsih, D. A. Setyabudi dan Nurmalinda. 2002. Pengaruh komposisi pulsing terhadap mutu segar bunga krisan. (In Indonesian) *J. Hort.* 12 (2): 124-130.
- [8]. Pusat Penelitian dan Pengembangan Hortikultura, 2012. Agro Inovasi Melaju di Tomohon Internasional Flower Festival (TIFF) 2012. (In Indonesian) *Website*.
- [9]. Ridwan dan Sunarto, 2007. Pengantar Statistika untuk penelitian Pendidikan, Sosial, Ekonomi, Komunikasi dan Bisnis. (In Indonesian) Alfabeta, Bandung. p. 19-36.
- [10]. Ridwan, H., Nurmalinda dan H. Supriadi. 2005. Analisis luas minimum usahatani bunga krisan potong. (In Indonesian) *Jurnal Hortikultura-Pusat Penelitian dan Pengembangan Hortikultura*. 15(4): 303-311.
- [11]. Steenkamp, J.B. dan Van Trijp, H.C.M. (1988), "The use of LISREL in the validating marketing constructs", *International Journal of Research in Marketing*, Vol. 8 No. 4, pp. 283-99.
- [12]. Sulyo, Y. Dan Kurniawan Budiarto. 2008. Penyiapan Sarana dan Prasarana Produksi. Teknologi Budidaya Krisan. Monograf 09. Balai Penelitian Tanaman Hias. (In Indonesian) Pusat Penelitian dan Pengembangan Hortikultura. Badan Penelitian dan Pengembangan Pertanian. p15.
- [13]. Sumarno, 2004. Pengelolaan Air Bagi Tanaman. Program Pasca Sarjana. Universitas Brawijaya. Malang
- [14]. Wasito, A. dan D. Komar. 2004. Jenis pupuk N, P dan K untuk peningkatan pertumbuhan dan produksi tanaman krisan. (In Indonesian) *Jurnal Hortikultura-Pusat Penelitian dan Pengembangan Hortikultura*. 14 (3): 172-177.