

MARKET STUDY OF COMPOUND FERTILIZER-BASED MINERAL AT TEA PLANTATION IN BANDUNG REGENCY

KAJIAN PASAR PUPUK MAJEMUK BERBASIS MINERAL PADA PERKEBUNAN TEH DI KABUPATEN BANDUNG

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ABSTRACT

The study of this research is to identify the market possibility of compound mineral fertilizer in Bandung Regency. The methodology used is survey method by using analysis model of market measurements. From the analysis and discussion, it can be identified the estimate of substantial potential of fertilizer market on tea plantation in Bandung Regency of IDR 111,070,309,152 with minimum market is IDR 74,742,993,050 or 67.29% from the total potential of fertilizer market as market penetration index. Meanwhile, the remains of 32.71% is market sensitivity area towards fertilizer demand. The estimate of the fertilizer demand is IDR 50,391,725,914 or 67.42% to a minimum market or 45.37% to potential market, and the remains of 54.63% is the market development opportunities in the future. Meanwhile its fertilizer competitor's are Urea, SP 36, KCL, Kieserite, NPK (sodium, phosphate and potassium), MOP (muriate of potash) and ZK (zheng and potassium). Based on the questionnaire results to 97 respondents about the characteristics and perceptions of fertilizer consumers, it is formulated mix marketing of product aspects such as the physical form of mineral fertilizers is granulees. There are 2 types of packaging, 25 kgs and 50 kgs, and its long shelf life is between 3-6 months. The selling price of end consumers is under IDR 5,000 with payment system can be used in credit. Meanwhile, promotion is carried out directly at the experimental garden, by conducting distribution through two channels, namely cooperatives and agents/distributors. According to overall analysis results, it can be concluded that by reviewing market and competition aspects, research and development of manufacture technology of compound fertilizer-based mineral is reasonable to be continued to the next stage in the commercialization process of technology.

Keywords: mineral fertilizer, market analysis, tea plant, productivity

ABSTRAK

Sasaran kajian adalah untuk dapat diketahui adanya peluang pasar pupuk majemuk mineral lengkap (PML) di Kabupaten Bandung, sedangkan metodologi yang digunakan adalah metode survei dengan menggunakan model analisis pengukuran pasar. Dari hasil analisis dan pembahasan dapat diidentifikasi perkiraan besarnya potensi pasar pupuk pada perkebunan teh di Kabupaten Bandung sebesar Rp. 111.070.309.152 minimum pasar sebesar Rp. 74.742.993.050 atau 67,29 % dari total potensi pasar pupuk sebagai indeks penetrasi pasar, sisanya sebesar 32,71% merupakan area sensitivitas pasar terhadap permintaan pupuk. Perkiraan permintaan PML sebesar Rp. 50.391.725.914 atau 67,42% terhadap minimum pasar atau 45,37% terhadap potensi pasar, sisanya sebesar 54,63% merupakan peluang pengembangan pasar di masa mendatang, sedangkan jenis pupuk pesaing adalah Urea, SP 36, KCL, Kieserit, NPK (sodium, phosphate and potassium), MOP (muriate of potash) dan ZK (zheng and potassium). Dari hasil kuesioner terhadap 97 responden tentang karakteristik dan persepsi

konsumen pupuk, dirumuskan bauran pemasaran dari aspek produk yaitu bentuk fisik pupuk mineral adalah bentuk granul, ukuran kemasan ada 2 jenis yaitu kemasan 25 kg dan kemasan 50 kg, dan lama daya simpan antara 3–6 bulan. Harga jual di konsumen akhir di bawah Rp. 5.000 dengan sistem pembayaran bisa melalui kredit. Promosi dilakukan langsung di lokasi kebun percobaan (demplot), dengan distribusi dilaksanakan melalui 2 jalur yaitu koperasi dan agen/distributor. Berdasarkan hasil analisis secara keseluruhan, dapat disimpulkan bahwa dilihat dari aspek pasar dan persaingan, litbang teknologi pembuatan pupuk majemuk berbasis mineral layak dilanjutkan ke tahap berikutnya dalam proses komersialisasi teknologi.

Kata Kunci: pupuk mineral, kajian pasar, tanaman teh, produktivitas

INTRODUCTION

Based on the Minister of Energy and Mineral Resources of the Republic of Indonesia Regulation Number 20 Year 2013 on the second amendment of the Minister of Energy and Mineral Resources Regulation Number 07 Year 2012 on Increasing the Value-Added of Mineral through Mineral Processing and Refining, there are potential minerals that have value-added, namely in agriculture as nutrients source of plants need, such as cassiterite, pyrolusite, psilomelane, braunite, manganite, feldspar and zircon. In addition, Indonesia has other potential minerals as agricultural fertilizer such as kieserite, phosphate and silicate minerals like muscovite, orthoclase, biotite, illite, mica, vermiculite and smectite.

Research on manufacturing technology of compound mineral-based fertilizer (CMF) was conducted by the Research and Development Centre for Mineral and Coal Technology for 13 years from 2001 until 2012. The outcome of this activities technically concluded that manufacturing compound fertilizer laboratory scale in basic has been managed and then it can be conducted on a pilot scale.

The flow chart of manufacturing compound fertilizer as it had been tested in previous research presented in Figure 1. The phosphate and dolomite rocks were crushed with jaw crusher at first. If its condition of materials was wet, it needed to be dried first with a rotary dryer. Then, the material was ground with a hammer mill, and followed by

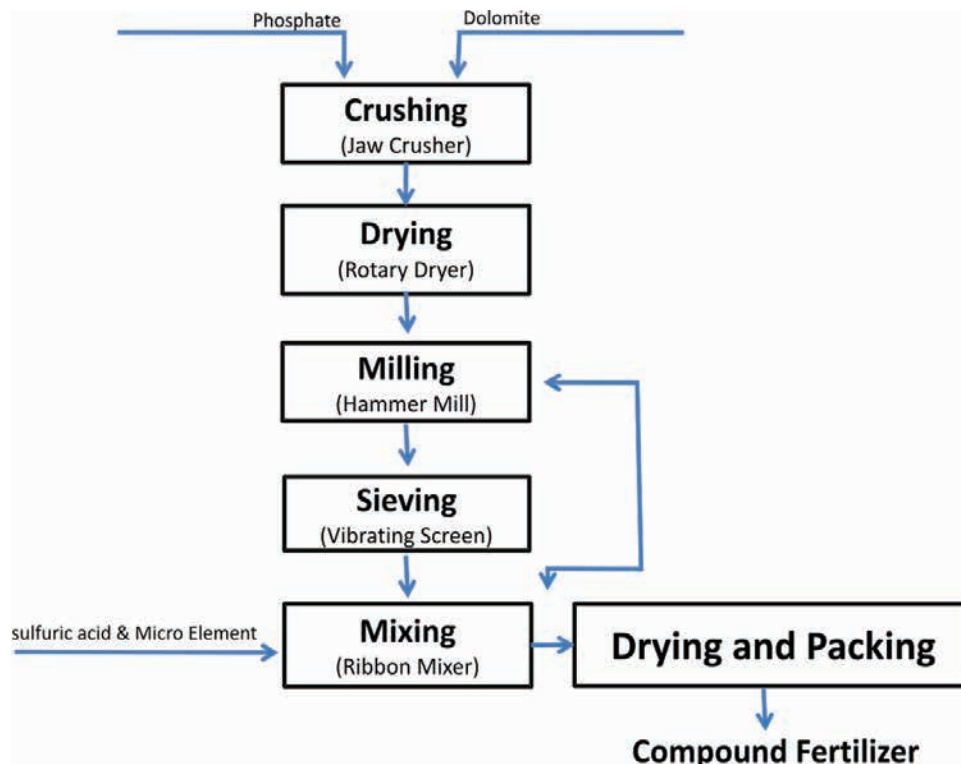


Figure 1. Flowchart of manufacturing compound fertilizer

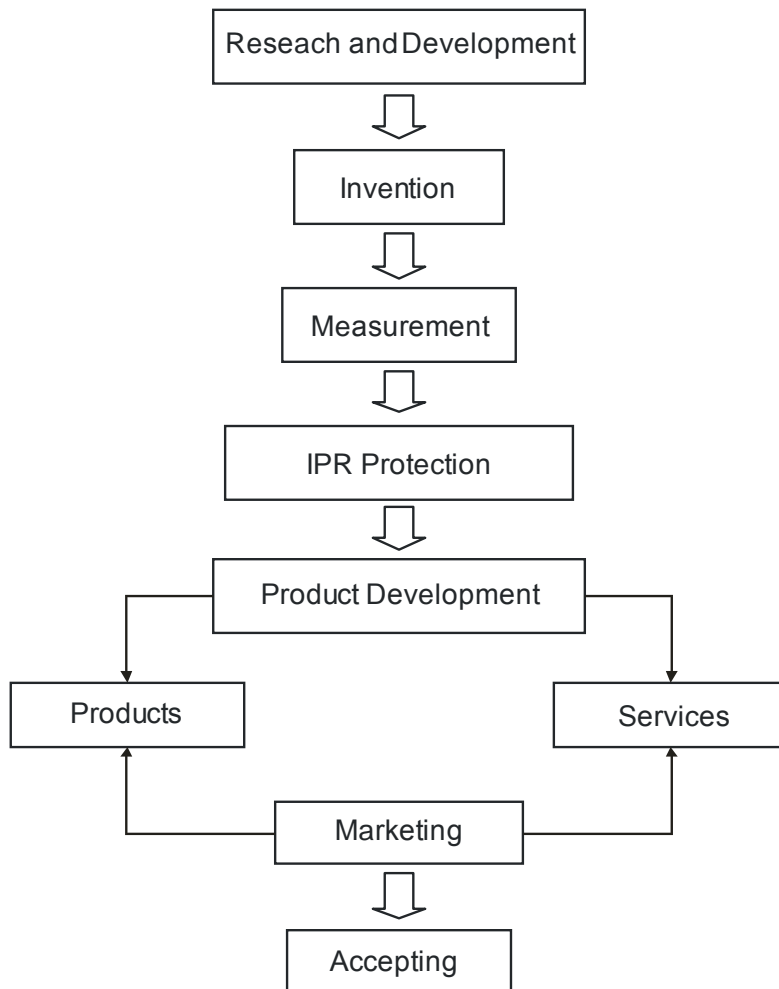
sieving at 80 mesh size with the vibrating screen. Products sieve-passed was transported to the ribbon mixer or paddle mixer, while the crude product was turned back to the grinding tool. In the ribbon mixer, the mixing process was taken place so that phosphate, dolomite and sulfuric acid can be mixed evenly with adding a little water. After the micro-nutrients were added, then the mixed product became a compound fertilizer (Ardha et al., 2000).

Based on the laboratory analysis results, the compound fertilizer (CF) contained the following nutrients: $P_2O_5 = 10\%$; $CaO = 23.6\%$; $MgO = 6.0\%$; $S = 6.3\%$; $B = 79 \text{ pCF}$; $Zn = 83 \text{ pCF}$; $Cu = 76 \text{ pCF}$; and $Mn = 72 \text{ pCF}$ (Purnomo, 2010).

It was seen from the commercialization technology model (Figure 2), the activities for manufac-

turing technology of compound fertilizer, it newly reached stage 2 (invention), and now it was entering phase 3, which was a stage in which the results studied from economic aspect covered business, market, and competitiveness aspects. Some studies have begun to enter phase 3, economic studies and trials utilizing fertilizers on rice and vegetables plants. The results showed that from the economic aspect of manufacturing technology of compound fertilizer, it had good prospects for being developed, but getting the decision it is ok or not by viewing market and competition aspects, its market analyses was needed to be studied.

Considering market definition has a very wide scope, in order to focus the object of study, then it was chosen one potential market segment used for a target market of CF, that is tea plant with



Source : Nasution, A.R., et.al. (2009).

Figure 2. Model of integrated technology commercialization

restricted area of the Bandung Regency for the following reasons:

- a. A wide of tea plantation in the Bandung Regency is 19,929 ha or 21% of the tea plantations area in West Java, or 16% of the tea plantations in Indonesia area, or 59% of the plantation area in the Bandung area, is about 33.684 ha. In 1936, there were 247 tea plantations of total 293 tea plantations in Indonesia registered in West Java (Dinas Pertanian, Perkebunan dan Kehutanan, 2013; Direktorat Jenderal Perkebunan, 2014; National Reference Group, 2012).
- b. Indonesia is the fifth largest exporter of tea in the world after India, China, Sri Lanka, and Kenya (R & D Institution at Ministry of Agriculture, 2008), while the National Reference Group (2012) stated that tea has contributed to net foreign exchange of Indonesia around 178 million US dollars in 2010.
- c. Plant varieties are made the study object is superior tea plant, it is cultivated tea plants and a natural hybrid of three main types or species, such as type of China (*Camellia sinensis* (L.) O. Kuntze, the type of Assam or India (*Camellia assamica* (Mast.) Wight ssp *assamica*, and type of Cambodia hybrid (*Camellia ssp assamica lasiocalyx* ex Planch Watt) (Ranganathan, 2012).

The study results can then be used as reference in making the decision whether the manufacturing technology of compound fertilizer, it is appropriate to proceed to the next stage or back to the research and development stage for being further developed.

MATERIAL AND METHODOLOGY

One objective of conducting market study is to identify market opportunities, and it necessary to measure market demand to get its identification. Kotler (2003) argued that market demand for a product is the total amount of products purchased by a particular consumer group in a specific area for a specific time and a specific marketing environment as well as in a specific marketing program.

Market demand measured consists of market potential, market minimum and the CMF demand. The potential market is a boundary approached by the market demand as industry marketing

expenditures reaches infinite levels and it will not stimulate further demand for a marketing environment. The market minimum is a number of sales currently in the marketing environment and in a specific marketing program, while CMF demand is market-segment demand to CMF estimated at alternative level of the company's marketing over a period of time. CMF demand depends on how consumer perceptions of CMF performance compared to other fertilizers competitors.

The distance between the potential market and minimum market is an area with sensitivity to market demand. For this type of market that can be expanded, product demand will be strongly influenced by the level of marketing expenditure, while for markets that can not be expanded, the product demand is not much influenced by the level of marketing expenditure. While, the fertilizer market is a market that can not be expanded, because the maximum demand will depend on the amount of best fertilizer need and composition for certain crop in a certain environment, the amount of fertilizer over dose/best composition will lead to waste even productivity decline. Therefore, an increase of CMF marketing should be directed to the attempt of seizing and achieving market share of the existing market potential.

Comparing the minimum current market to its market potential that is called by the index level of market penetration (market-penetration index). This market penetration index is an indicator of how far the industry's marketing efforts have caught the existing market potential, the lower market penetration index of a product, the higher market opportunities to capture the existing market potential.

To calculate the total potential market of fertilizer used the following general formula:

$$TPP = nqp$$

where:

- TPP = Total Market Potential
- n = the amount of tea plantation area
- q = dose standard garden
- p = price of fertilizer

After setting market segmentation of fertilizer at tea plant in Bandung, based on the above formula, the total potential of fertilizer market can be calculated by multiplying the plantation area

with a standard dose fertilizer composition of garden, then it is multiplied by the price of fertilizer. A standard dose composition of garden used in calculating the total potential market is similar to CMF trials namely urea 434 kg, SP36 132 kg, KCL 160 kg and kieserite 229 kg, while the standard price used is non-subsidized price applied generally in the Bandung Regency, for urea is Rp. 5,500, SP36 Rp. 5,850, KCL Rp. Kieserite 6,500 and Rp. 6,000.

Calculating the minimum market is carried out by summing all the use of fertilizers on tea plantation in the Bandung Regency during 2013 multiplied by the price, whereas for estimating the CMF market demand, it needs to know first the perception of CMF productivity compared to other fertilizer competitors. Therefore, to estimate the CMF demand for tea plantation in Bandung carried stages as follows:

- a. Identifying the CMF productivity level compared to other fertilizer competitors, it is extracted from the data and information on the CMF testing results at tea plant, then it is compared to the productivity level of fertilizer use to other people's plantations, a large private and country plantations. The productivity level is obtained by comparing the total (production x a unit price) to fertilizer cost. CMF position compared to the whole fertilizer market can be one basis to estimate the amount of CMF demand, that is the ability proportion of CMF to the overall sales of all fertilizers in Bandung. The estimate of CMF demand can be used as indicators of the ability of CMF in controlling the CMF market and position on market competition.
- b. Identifying the market characteristics and perceptions, it conducts a market survey through questionnaires. Respondents consisted of 97 farmers in the district Ciwidey tea Bandung Regency of total 732 farmers. All respondents were provided a set of questions or a written statement to be answered. The survey results are expected to generate information on the strengths and weaknesses of fertilizer competitors as well as CMF marketing expected.
- c. Identifying potential fertilizer competitors which have similar content of macro and micro nutrients to CMF, then it can be used as a target to be substituted with CMF.
- d. CMF demand is the total sum of fertilizers with lower productivity compared to the CMF productivity, by assuming that the better

productivity of CMF and proper marketing strategy, then the consumer will be more attracted and change to use CMF.

In order to sell CMF and seize the existing market segmentation, it is necessary to develop the proper marketing strategy for going in the existing market opportunities. Any decision making of CMF marketing needs to pay attention to the external and internal environment. By noticing to the external environment, it will be identified market opportunities while the internal environmental analysis will be identified to what extent the strengths and weaknesses of CMF products.

There are several variables that can be used in CMF marketing. Kotler (2000) in his book of Marketing Management argued that "the marketing is a group of marketing tricks that companies use to achieve their marketing objectives in the target market". Furthermore, Kotler formulated marketing into 4 P (Product, Price, Promotion and Place). In order to seize the market, the four elements need to be designed by taking into account the characteristics of the consumers needs and desires.

Data of CMF test result on experimental garden is used as a basis of calculating the CMF productivity levels compared to other fertilizer competitors, while data from questionnaire respondents is used to formulate CMF marketing strategies, as well as secondary data and other supporting information.

RESULTS AND DISCUSSION

There are three types of market demand to be measured in this study, namely market potential, minimum market and estimate of CMF demand. Data and information required in the measurement of market demand are:

- a. Tea plantation area in Bandung.
- b. A standard dose of garden that will be the standard for the use of fertilizers on tea plantations. In this study, the dose standard of garden that will be used is a dose standard of garden used in CMF testing in tea plant.
- c. The amount of fertilizer based on the fertilizers composition used today for community plantation, private and country plantations.
- d. The price of other types of fertilizer that used.
- e. The CMF trial in tea plantations.

Market Potential

Tea plantation area in Bandung Regency is 19,929 ha or 21% of the area of tea plantations in West Java, or 16% of the tea plantations area in Indonesia, which consists of Large Private Plantation area of 5,905 ha, the Large Country Plantation area of 12,323.46 hectares and People’s Plantation area of 1,701 ha, as shown in Table 1.

Compared to the plantation area in the district of Bandung, the tea plantation has an area of 19 929 ha or 59% of the plantation area covering 33,684 ha, as Table 2.

Based on the formula above, it can be calculated the amount of the fertilizer market total potential as follows:

$$\begin{aligned}
 TPP &= 19,929.36 \text{ ha} \times (434 \text{ kg} \times \text{Rp. } 5,500 + 132 \times \text{Rp. } 5,850 + 160 \times \text{Rp. } 6,500 + 229 \times \text{Rp. } 6,000) \\
 TPP &= 19,929.36 \text{ ha} \times \text{Rp. } 5,573,200 = \text{Rp. } 111,070,309,152.00
 \end{aligned}$$

Minimum Market

Minimum market is the total sales of fertilizer during 2013 in line with marketing conditions and marketing program today. The total sales value of fertilizer during 2013 obtained from the use data of fertilizers for people plantations, private and country plantations. This assumption is still considered to being valid, based on the ques-

tionnaire results, the farmers generally bought fertilizer when they needed and did not provide stock. Tea plantations used single fertilizer as well as compound fertilizer in its application. One of NPK used is NPK (27%: 6%: 10%). When it was compared to conventional fertilizers (Urea + ZA + SP-36 + KCl + Kieserite), these fertilizers showed a highly significant difference to the component parameters, yield potential, tea leaf nutrient and soil analysis (Rahardjo, et al, 2012). The use of fertilizer for people tea plantations during the year 2013 is shown in Table 3.

The type and amount of fertilizers for Large Private Tea Plantation is shown in Table 4, for the State plantation is shown in Table 5, while the number of total use of all types of fertilizer for tea plantations and sales value in the Bandung Regency during 2013 is amounted of Rp. 76,256,590,650.00, as shown in Table 6.

For calculating interest of CMF estimated demand, the minimum market meant here is for types of fertilizer competitors (fertilizer substitution), which contain macro and micro nutrients similar to CMF as shown in Table 7. Therefore, the non - competitor types of fertilizer such as ZA, Growmore, madgib, compost, and foliar (bayfolan) should be excluded from the calculation (Table 8), while the remains in the table is potential competitors types consist of Urea, SP 36, KCL, Kieserite, NPK, MOP and ZK with the total amount of those fertilizers use at tea plantations and its sales value in Band-

Table 1. Area and tea production in 2013

Description	Indonesia	West Java	Bandung Regency
I Area (000 Ha)			
a. Peoples’s Plantation	56,409.00	48,768.00	1,701.00
b. Large Private Plantation	38,205.00	25,257.00	12,323.46
c. Large Country Plantation	27,931.00	21,092.00	5,904.90
Total	122,545.00	95,117.00	19,929.36
II Production (000 ton)			
a. Peoples’s Plantation	51,948.00	42,511.00	3,518.39
b. Large Private Plantation	59,877.00	33,842.00	18,168.46
c. Large Country Plantation	34,857.00	27,128.00	12,534.62
Total	146,682.00	103,481.00	34,221.47
III Rata-Rata Produksi (ton/ha)	1.20	1.09	1.72

Sources :
 - Department of Agriculture, Plantation, and Forestry (2013)
 - Direktorat Jenderal Perkebunan (2014)

Table 2. Plantation area in Bandung Regency (2013)

No	Items	Status of Use	Immature Plants (IP) (Ha)	Mature Plants (MP) (Ha)	Old damage plants/ this year (Ha)	Total (Ha)	New Planting (Ha)	Re Planting (Ha)	Total Area (Ha)	Production (Ton)	Average Production (Kg/Litre)
1	Tea	PR	107.00	1,583.00	11.00	1,701.00			1,701.00	3,518.39	2.07
		PBS	109.17	5,648.53	147.20	5,904.90			5,904.90	12,534.62	2.12
		PTP	1,530.54	9,897.28	590.27	12,018.09	89.80	215.57	12,323.46	18,168.46	1.47
	Total		1,746.71	17,128.81	748.47	19,623.99	89.80	215.57	19,929.36	34,221.47	1.72
					60%				0.59		
2	Clove	PR	99.00	566.30	119.20	784.50	177.50		962.00	110.05	0.19
		PBS	-	0.50	-	0.50			0.50	0.09	0.19
		PTP	-	-	-	-			-	-	-
	Total		99.00	566.80	119.20	785.00	177.50		962.50	110.14	-
3	Quinine	PR	25.00	-	-	25.00			25.00	-	-
		PBS	-	-	-	-			-	-	-
		PTP	-	-	-	-			-	-	-
	Total		25.00	-	-	25.00			25.00	-	-
4	Sugar Palm	PR	8.00	108.44	20.00	136.44			136.44	39.00	0.36
5	Cacao	PR	13.00	-	27.00	40.00			40.00	-	-
6	Haramay	PR	-	9.00	3.00	12.00			12.00	10.80	-
7	Cashew	PR	1.00	-	3.00	4.00			4.00	-	-
8	Jatropha	PR	-	-	13.00	13.00			13.00	-	-
9	Coconut	PR	10.50	548.00	98.50	657.00			657.00	427.67	0.78
10	Coffee	PR	2,926.50	6,686.50	173.00	9,786.00	227.00		10,013.00	6,637.60	0.99
11	Kapok	PR	-	2.90	2.20	5.10			5.10	1.30	0.45
12	Hazelnut	PR	-	6.00	1.50	7.50			7.50	2.39	0.40
13	Pepper	PR	-	-	1.00	1.00			1.00	-	-
14	patchouli	PR	2.00	4.00	-	6.00			6.00	22.00	5.50
15	tobacco	PR	-	1,848.00	-	1,848.00			1,848.00	1,678.41	0.91
16	betel nut	PR	1.00	12.00	4.00	17.00			17.00	1.14	0.91
17	Nutmeg	PR	5.00	-	2.00	7.00			7.00	-	-
	Total		2,967.00	9,224.84	348.20	12,540.04	227.00		12,767.04	8,820.31	
	Total Total		4,837.71	26,920.45	1,215.87	32,974.03	494.30	215.57	33,683.90		

Source : Department of Agriculture, Plantation, and Forestry (2013)
(Tanda titik dan koma terbalik untuk bhs Indonesia)

Table 3. The use of fertilizer for people tea plantations in Bandung Regency (2013)

District	Fertilized Area (Ha)	Type of Fertilizer/Total (Kg/Ltr/Ha)				
		Urea	SP36	KCL	Kieserite	ZK
1 Arjasari	1	250	60	-	-	180
2 Cicalengka	5	1,250	300	-	-	900
3 Cikancung	10	2,500	600	-	-	1,800
4 Ciwidey	244	61,000	14,640	-	-	43,920
5 Kertasari	91	22,750	5,460	-	-	16,380
6 Pasirjambu	445	111,250	26,700	-	-	80,100
7 Pangalengan	863	215,750	51,780	-	-	155,340
8 Rancabali	42	10,500	2,520	-	-	7,560
Total	1,701	425,250	102,060	-	-	306,180

Source : Department of Agriculture, Plantation, and Forestry (2013), it is re-analysed.

ung Regency during 2013 is minimum market of Rp. 74,742,993,050.00 or 67.29% of the total potential of fertilizer market as a market-penetration index, while the remains of 32.71% is the area of market sensitivity to fertilizers demand.

The Estimation of CMF Demand

CMF demand depends on the CMF position compared to other fertilizers competitors besides it is influenced by the demand and supply level of fertilizers (external factors), namely what is the difference between competitors' products and CMF position in the consumers view, including the guaranteed benefits of the product. To describe CMF market position at tea plantation in Bandung Regency, the productivity level of CMF and its fertilizer competitor products were calculated at first, then the results was compared to each other. The variables used in calculating this productivity level are fertilizer costs and the acceptance value. Fertilizer costs obtained from fertilizer use multiplied with fertilizer price, while the revenues obtained from total production multiplied with fertilizer price. Fertilizers dose and estimated shoots production per year for CMF taken from the test results to the tea plant as shown in Tables 9 and 10.

Based on trial results of CMF in tea plants above, it was obtained the highest CMF production estimate is 11,631 kg in treatment P3 (80% CMF of tekMIRA composition), with the highest estimate crop productivity is 2,443 kg/ha. This production estimates to all treatment are still under the productivity potential of clones Gambung 7 in the

third cutting years, which is amount of 5,391 kg/ha (Sriyadi, 2006) with a shoot weight of peko on medium picking is 2,083 grams (PPTK, 2006). This is due to the trials conducted with rainfall period <100 mm or so-called dried period. To get reducing in production due to a long dry period in the lowlands, medium, and upland respectively reaches 40%, 32%, and 27% (Rahardjo et al., 2013).

Therefore, if the test is done in the rainy season, CMF production levels is expected to be higher than the estimate above, bearing in mind that a productive tea plant can consume water equivalent to rainfall 1.34 to 2.66 mm/day at air temperature 10-28 °C (Chang and Wu in Rachmiati et al., 2014). In addition, tea plants are sensitive to drought, when the dry season causes disruption of plant growth and production reduction by 40-60% and 20-40% plant death (Wibowo et al., In Rachmiati et al., 2014).

In order to see the CMF position, further productivity of this P3 is compared to the productivity of other fertilizers, as shown in Table 11 and Figure 3.

Some important things need to be considered to obtain healthy tea plants and produce optimal fresh tea shoots or close to genetic potential production, one of which is land and fertilizing. Fertilizer is a high element of production costs, reaching 15-25% of the production costs and 40-45% of the maintenance cost. (Pranoto, 2015).

Table 4. The use of fertilizer for large private tea plantations in Bandung Regency (2013)

Name of Farm	Area (Ha)	Fertilizer Dose (Kg/Ha)	Total (Kg)	Name of Farm	Area (Ha)	Fertilizer Dose (Kg/Ha)	Total (Kg)	
Dewata	561.50	Urea	156.85 Kg	Cibuni	2,736.00	Urea	4.20 Kg	
		SP36	5.72 Kg			SP36	2.10 Kg	
		KCL	27.88 Kg			Kieserite	1.05 Kg	
		Kieserite	26.27 Kg			MOP	7.96 Kg	
		NPK	40.93 Kg			ZA	20.07 Kg	
		ZN.SO4	3.42 Kg	1,92	Kerta sari	1,725.00	Urea	98.61 Kg
		Grow-more	0.88 ltr	494			NPK	0.03 Kg
		Madgib	0.37 ltr	205			MOP	201.34 Kg
		Compost	349.07 Kg	196			Urea	590,716
Nagarakanaan	2,766.00	Urea	2996 Kg			SP36	25,346	
		SP36	5.92 Kg			KCL	50,126	
		KCL	12.46 Kg	34,472		Kieserite	17,626	
		ZN.SO4	0.40 Kg	1,107		NPK	145,073	
		Growmore	0.11 ltr	294		ZN.SO4	3,027	
		Madgib	0.07 Kg	205		ZA	54,899	
		Compost	70.86 Kg	196		MOP	369,099	
		Bayfolan	0.013 ltr	36		Growmore	788	
Patuah watee	610.71	Urea	390.00 Kg			Madgib	410	
		NPK	199.83 Kg			Compost	392	
						Bayfolan	36	

Source : Department of Agriculture, Plantation, and Forestry (2013), it is re-analysed.

Table 5. The use of fertilizer for large country's tea plantations in Bandung Regency (2013)

Name of Farm	Area (Ha)	Fertilizer Dose (Kg /Ha)	Total (Kg)	Name of Farm	Area (Ha)	Fertilizer Dose (Kg /Ha)	Total (Kg)
Sinumbra	1510.39	Urea	434	Malabar	1,241.34	Urea	434
		TSP/SP36	132			TSP/SP36	132
		KCL	160			KCL	160
		Kieserite	229			Kieserite	229
		Urea	434			Urea	434
Rancabali	1,606.42	TSP/SP36	132	Purbasari	1,212.34	TSP/SP36	132
		KCL	160			KCL	160
		Kieserite	229			Kieserite	229
		Urea	434			Urea	434
		TSP/SP36	132			TSP/SP36	132
Rancabolang	700.57	KCL	160	Talun Santosa	1,278.03	KCL	160
		Kieserite	229			Kieserite	229
		Urea	434			Urea	434
		TSP/SP36	132			TSP/SP36	132
		KCL	160			KCL	160
Pasirmalang	1,074.07	Kieserite	229	Sedep	1,760.81	Kieserite	229
		Urea	434			Urea	434
		TSP/SP36	132			TSP/SP36	132
		KCL	160			KCL	160
		Kieserite	229			Kieserite	229
		Urea	434	Total of Fertilizer Use at		Urea	4,967,989.32
Kertamanah	1,063.01	TSP/SP36	132	Large Country's Tea Plan-		TSP/SP36	1,511,001.36
		KCL	160	tations		KCL	1,549,787.20
		Kieserite	229			Kieserite	2,621,358.42
		Urea	434			Urea	

Source : Department of Agriculture, Plantation, and Forestry (2013), it is re-analysed.

Table 6. Total fertilizers use and sales of fertilizer industry at tea plantation in Bandung Regency (2013)

Type of Fertilizer	People Plantantion	Large Private Tea Plantations	Large Country's Tea Plantations	Total (Kg/Lt)	Unit Price (Rp/Kg/Lt)	Selling Price (Rp)
1 Urea	425,250.00	590,716.00	4,967,989.32	5,983,955.32	5,500	32,911,754,260
2 SP36	102,060.00	25,346.00	1,511,001.20	1,638,407.20	5,850	9,584,682,120
3 KCL	-	50,126.00	1,549,787.20	1,599,913.20	6,500	10,399,435,800
4 Kieserite	-	17,626.00	2,621,358.42	2,638,984.42	6,000	15,833,906,520
5 NPK	-	145,073.00	-	145,073.00	8,450	1,225,866,850
6 ZN.SO ₄	-	3,027.00	-	3,027.00	7,500	22,702,500
7 ZA	-	54,899.00	-	54,899.00	2,900	159,207,100
8 MOP	-	369,099.00	-	369,099.00	6,500	2,399,143,500
9 Grow-more	-	788.00	-	788.00	46,000	36,248,000
10 Madgib	-	410.00	-	410.00	2,200,000	902,000,000
11 ZK	306,180.00	-	-	306,180.00	7,800	2,388,204,000
12 Compost	-	392,000.00	-	392,000.00	1.000	392,000,000
13 Bayfolan	-	36.00	-	36.00	40,000	1,440,000
Total Selling Price of Fertilizer						76,256,590,650

Table 7. Contents of macro and micro nutrients of various fertilizers

Type of Fertilizer	N	P	K	Mg	S	B	Cu	Mn	Zn	Fe	Mo
1 CMF	v	v	v	v	v	v	v	v	v	v	v
2 Urea	v	-	-	-	-	-	-	-	-	-	-
3 SP36	-	v	-	-	-	-	-	-	-	-	-
4 KCL	-	-	v	-	-	-	-	-	-	-	-
5 Kieserite	-	-	-	v	-	-	-	-	-	-	-
6 NPK	v	v	v	-	-	-	-	-	-	-	-
7 ZN.SO ₄	-	-	-	-	-	-	-	-	-	-	-
8 ZA	-	-	-	-	-	-	-	-	-	-	-
9 MOP	-	-	v	-	-	-	-	-	-	-	-
10 Grow-more	-	-	-	-	-	-	-	-	-	-	-
11 Madgib	-	-	-	-	-	-	-	-	-	-	-
12 ZK	v	-	v	-	v	-	-	-	-	-	-
13 Compost	-	-	-	-	-	-	-	-	-	-	-
14 Bayfolan	-	-	-	-	-	-	-	-	-	-	-

Note: (v) means its nutrients are available and (-) means its nutrients are not available

Table 8. Total fertilizers use and sales of fertilizer competitors industry at tea plantation in Bandung Regency (2013)

Type of Fertilizer	People Plantation	Large Private Tea Plantations	Large Country's Tea Plantations	Total (Kg/Lt)	Unit Price (Rp/Kg/Lt)	Selling Price (Rp)
1 Urea	425,250.00	590,716.00	4,967,989.32	5,983,955.32	5,500	2,911,754,260
2 SP36	102,060.00	25,346.00	1,511,001.20	1,638,407.20	5,850	9,584,682,120
3 KCL	-	50,126.00	1,549,787.20	1,599,913.20	6,500	10,399,435,800
4 Kieserite	-	17,626.00	2,621,358.42	2,638,984.42	6,000	15,833,906,520
5 NPK	-	145,073.00	-	145,073.00	8,450	1,225,866,850
8 MOP	-	369,099.00	-	369,099.00	6,500	2,399,143,500
11 ZK	306,180.00	-	-	306,180.00	7,800	2,388,204,000
Total Selling Price of Fertilizer Competitors						74,742,993,050

Table 9. Dose of fertilizer and estimated production of shoots in each treatment

No	Treatment	Fertilizer (kg/plot/application)	Estimated production of shoots in a year (kg/ha/year)
P1	120% CMF Tekmira	3.6 kg (600 kg/ha/year) + Urea 2.6 kg (434 kg/ha/year) + KCl 0.96 kg (160 kg/ha/year) + Kieserite 0.42 kg (70 kg/ha/year)	11,487
P2	100% CMF Tekmira	3.0 kg (500 kg/ha/year) + Urea 2.6 kg (434 kg/ha/year) + KCl 0.96 kg (160 kg/ha/year) + Kieserite 0.42 kg (70 kg/ha/year)	11,523
P3	80% CMF Tekmira	2.4 kg (400 kg/ha/year) + Urea 2.6 kg (434 kg/ha/year) + KCl 0.96 kg (160 kg/ha/year) + Kieserite 0.42 kg (70 kg/ha/year)	11,631
P4	60% CMF Tekmira	1.8 kg (300 kg/ha/year) + Urea 2.6 kg (434 kg/ha/year) + KCl 0.96 kg (160 kg/ha/year) + Kieserite 0.42 kg (70 kg/ha/year)	10,623
P5	NPK Comparator (25:7:12:3)	4 kg (667 kg/ha/year)	10,515
P6	Dose of Fertilizer for Farm (Single Nutrients/Straight Fertilizer)	2.6 kg Urea (434 kg/ha/year); 0.79 kg SP-36 (132 kg/ha/year); 0.96 kg KCl (160 kg/ha/year); dan 1.37 kg Kieserite (229 kg/ha/year)	11,235

Table 10. Estimated production of shoots (kg/ha) in each treatment

No	Treatments	Total 8 times of Picks (kg/plot)	Estimated Production of Shoots in a year (kg/ha/year)	Estimated Productivity (kg/ha/year)
1	120% CMF Tekmira	79.75	11,487	2,412
2	100% CMF Tekmira	80.00	11,523	2,420
3	80% CMF Tekmira	80.75	11,631	2,443
4	60% CMF Tekmira	73.75	10,623	2,231
5	NPK Comparator (25:7:12:3)	73.00	10,515	2,208
6	Dose of Fertilizer for Farm (Single Nutrients/ Straight Fertilizer)	78.00	11,235	2,359

Table 11. Productivity of CMF and other fertilizers in Bandung Regency (2013)

No	Fertilizer Composition	/Treatment (T)	Unit Price (Rp)	Fertilizing Cost (Rp)	Production of Shoots (Kg/ha/th)	Unit Price of Shoots (Rp)	Revenue (Rp)	Productivity (%)	
P3	CMF 80%	CF Min	400 Kg	4,000	1,600,000	11,631	1,900	22,098,900	4.06
		Urea	434 Kg	5,500	2,387,000				
		KCL	160 Kg	6,500	1,040,000				
		Kieserite	70 Kg	6,000	420,000				
				5,447,000					
P7	Sinumbra	Urea	434 Kg	5,500	2,387,000	3,829	1,900	7,274,286	1.31
		SP36	132 Kg	5,850	772,200				
		KCL	160 Kg	6,500	1,040,000				
		Kieserite	229 Kg	6,000	1,374,000				
				5,573,200					
P8	Rancabali	Urea	434 Kg	5,500	2,387,000	8,610	1,900	16,358,095	2.94
		TSP/SP36	132 Kg	5,850	772,200				
		KCL	160 Kg	6,500	1,040,000				
		Kieserite	229 Kg	6,000	1,374,000				
				5,573,200					
P9	Rancabolang	Urea	434 Kg	5,500	2,387,000	6,871	1,900	13,055,714	2.34
		TSP/SP36	132 Kg	5,850	772,200				
		KCL	160 Kg	6,500	1,040,000				
		Kieserite	229 Kg	6,000	1,374,000				
				5,573,200					
P10	Pasirmalang	Urea	434 Kg	5,500	2,387,000	9,743	1,900	18,511,429	3.32
		TSP/SP36	132 Kg	5,850	772,200				
		KCL	160 Kg	6,500	1,040,000				
		Kieserite	229 Kg	6,000	1,374,000				
				5,573,200					
P11	Kertamanah	Urea	434 Kg	5,500	2,387,000	5,757	1,900	10,938,571	1.96
		TSP/SP36	132 Kg	5,850	772,200				

Table 11. Productivity of CMF and other fertilizers in Bandung Regency (2013)

No	Fertilizer Composition /Treatment (T)	Unit Price (Rp)	Fertilizing Cost (Rp)	Production of Shoots (Kg/ha/th)	Unit Price of Shoots (Rp)	Revenue (Rp)	Productivity (%)
P11	Kertamanah	KCL	160 Kg	6,500	1,040,000		
		Kieserite	229 Kg	6,000	1,374,000		
P12	Malabar	Urea	434 Kg	5,500	2,387,000	19,063,333	3.42
		TSP/SP36	132 Kg	5,850	772,200		
		KCL	160 Kg	6,500	1,040,000		
		Kieserite	229 Kg	6,000	1,374,000		
P13	Purbasari	Urea	434 Kg	5,500	2,387,000	8,740,000	1.57
		TSP/SP36	132 Kg	5,850	772,200		
		KCL	160 Kg	6,500	1,040,000		
		Kieserite	229 Kg	6,000	1,374,000		
P14	Talun Santosa	Urea	434 Kg	5,500	2,387,000	11,110,476	1.99
		TSP/SP36	132 Kg	5,850	772,200		
		KCL	160 Kg	6,500	1,040,000		
		Kieserite	229 Kg	6,000	1,374,000		
P15	Sedep	Urea	434 Kg	5,500	2,387,000	23,659,524	4.25
		TSP/SP36	132 Kg	5,850	772,200		
		KCL	160 Kg	6,500	1,040,000		
		Kieserite	229 Kg	6,000	1,374,000		
P16	Dewata	Urea	157 Kg	5,500	862,672	16,205,100	5.79
		SP36	6 Kg	5,850	33,464		
		KCL	28 Kg	6,500	181,213		
		Kieserite	26 Kg	6,000	157,624		

Table 11. Productivity of CMF and other fertilizers in Bandung Regency (2013) (continued)

No	Fertilizer Composition	/Treatment (T)	Unit Price (Rp)	Fertilizing Cost (Rp)	Production of Shoots (Kg/ha/th)	Unit Price of Shoots (Rp)	Revenue (Rp)	Productivity (%)	
P16 Dewata	NPK	41 Kg	8,450	345,901					
	ZN.So4	3 Kg	7,500	25,646					
	Growmore	1 ltr	46,000	40,470					
	Madgib	0 ltr	2,200,000	803,206					
	Compost	349 Kg	1,000	349,065					
				2.799,261					
P17 Nagara-kanaan	Urea	30 Kg	5,500	164,783	1,138	1,900	2,162,200	4.14	
	SP36	6 Kg	5,850	34,633					
	KCL	12 Kg	6,500	81,008					
	ZN.So4	0.4 Kg	7,500	3,002					
	Growmore	0.1 ltr	46,000	4,889					
	Madgib	0.1 Kg	2,200,000	163,051					
	Compost	71 Kg	1,000	70,860					
	Bayfolan	0.01 ltr	40,000	521					
				522,747					
P18 Patuahwatee	Urea	390 Kg	5,500	2,144,992	2,180	1,900	4,142,000	1.08	
	NPK	200 Kg	8,450	1,688,561					
				3,833,553					
P19 Kertasari	Urea	99 Kg	5,500	542,341	1,493	1,900	2,836,700	1.53	
	NPK	0.03 Kg	8,450	245					
	MOP	201 Kg	6,500	1,308,719					
				1,851,306					
P20 Perkebunan Rakyat	Urea	250 Kg	5,500	1,375,000	6,276	1,900	11,924,762	3.81	
	SP36	60 Kg	5,850	351,000					
	ZK	180 Kg	7,800	1,404,000					
				3,130,000					

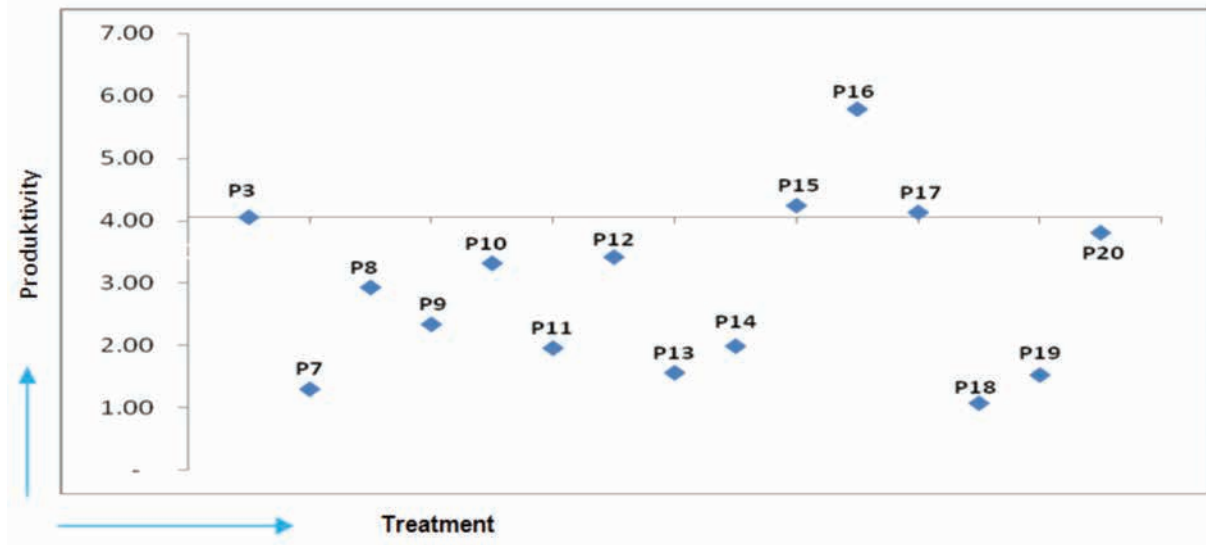


Figure 3. CMF Position (P3) compared to other fertilizer use

From Table 11 and Figure 3, it can be seen that position of P15, P 16 and P17 are above the P3 line, while the rest are below the P3 line. It means if we notice criteria of fertilizer costs and production, CMF is still superior compared to the composition of the fertilizer used generally in plantations Sinumbra, Rancabali, Rancabolang, Pasirmalang, Kertamanah, Malabar, Purbasari, Talun Santosa, Patuahwatee, Kertasari, and Smallholders, it is but still less than the fertilizers composition in plantation Sedep, Gods and Nagarakanaan.

Market demand from P3 to the bottom line is the estimate of CMF maximum demand, if it is noticed from the cost and production criteria in which those are able to be mastered by CMF and it is also its ability to the overall sales of all competitors, including CMF selling ability itself.

With the proper marketing strategy, it is assumed that consumers will choose the more profitable type and composition of fertilizers (Table 12), the estimate of CMF maximum demand can be calculated by summing the percentage of the market segmentation- P20, P12, P10, P8, P14, P11, P13, P19, P7 and P18- it is obtained figure of 67.42% from the minimum market or Rp. 50,391,725,914.31.

If it is compared to the potential total of fertilizer market, the CMF demand reaches 45.37%, while the remains of 44.63% is the market sensitivity area and it is a market opportunity for the market developent of CMF in the future.

One of the tea agribusiness in order to be profitable is to increase productivity. The line of Break Event Point (BEP) in the Sumatra region is about 3000-3500 kg / ha / yr and in Java is around 2500-3000 kg / ha / yr (Business Bandung, 2011). From the above calculation, it can be described three types of market demand, as shown in Figure 4 below.

Consumer characteristics and perception

To set a CMF marketing strategy, it is necessary to keep in mind the characteristics of market target that we addressed. Based on the questionnaire results were distributed to 97 respondents in the people tea plantations, it can be identified consumer characteristics as fertilizer user in the people tea plantations (Table 13) as follows:

- 1) It is aimed to meet the fertilizer needs. In general, consumers use a mixture of several types of single fertilizer. The most fertilizer composition widely used is a mixture of urea + TSP + KCL as much as 32.99%, then the mixture of urea and NPK 17 (17.53%), urea + TSP + KCI + ZA 11 (11.34%), urea + TSP + KCI + NPK 2 (2.06%), but there are also customers who only use urea as many as 17 people (17.53%) and NPK only 6 people (6.19%).
- 2) A single fertilizer type most widely used by consumers are urea 77 (79.38%), then TSP / SP36 as many as 33 people (34.02%), and KCL 32 people (32.99%), while the remains 25 people (25.77%) use a complete fertilizer NPK.

Table 12. Steps of fertilizer productivity in each treatment (2013)

No.	Number of treatment/ Plantation Name	Fertilizing Cost (Rp)	Production of Shoots (Kg/ha/th)	Revenue (Rp)	Productivity (%)	Contribution to Total Productivity (%)
1	P16 Dewata	2,799,261	8,529	16,205,100	5.79	13.30830556
2	P15 Sedep	5,573,200	12,452	23,659,524	4.25	9.759235203
3	P17 Nagarakanaan	522,747	1,138	2,162,200	4.14	9.508643459
4	P3 CMF 80%	5,447,000	11,631	22,098,900	4.06	9.326693293
5	P20 Perkebunan Rakyat	3,130,000	6,276	11,924,762	3.81	8.75829951
6	P12 Malabar	5,573,200	10,033	19,063,333	3.42	7.863368479
7	P10 Pasirmalang	5,573,200	9,743	18,511,429	3.32	7.635715191
8	P8 Rancabali	5,573,200	8,610	16,358,095	2.94	6.747494167
9	P9 Rancabolang	5,573,200	6,871	13,055,714	2.34	5.385306462
10	P14 Talun Santosa	5,573,200	5,848	11,110,476	1.99	4.582921923
11	P11 Kertamanah	5,573,200	5,757	10,938,571	1.96	4.512013522
12	P13 Purbasari	5,573,200	4,600	8,740,000	1.57	3.605132392
13	P19 Kertasari	1,851,306	1,493	2,836,700	1.53	3.522489129
14	P7 Sinumbra	5,573,200	3,829	7,274,286	1.31	3.000544972
15	P18 Patuahwatee	3,833,553	2,180	4,142,000	1.08	2.483836738
					43.50	100.00000000

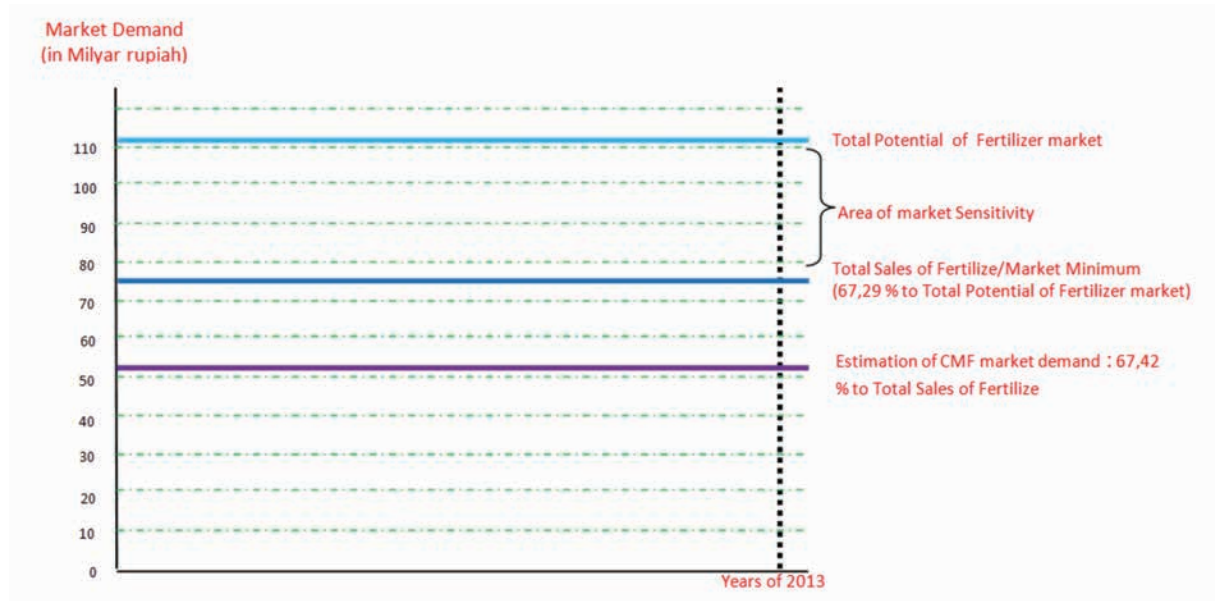


Figure 4. Potential of fertilizer market, total of fertilizer sales today, and market estimation of CMF (2013)

- 3) Consumers usually buy fertilizer from the agent / distributor as many as 87 people (89.69%), the remains are 10 people (10.31%) buy from a storing manure.
- 4) Of the 97 respondents, 66 people (68.04%) expressed dissatisfaction over the current fertilizer use, the remains are 26 people (26.80%) satisfied, and 5 people are no answer (5.15%).
- 5) The reasons for consumer dissatisfaction on the performance of the current fertilizer are: when consumers need it; the goods are often

Table 13. Characteristics of use and consumer perception on fertilizer used today

No	Description	Total	%	No	Description	Total	%
1	Type of Fertilizer Used			6	Fertilizer Price Used to be Purchased		
a	Urea	77	79.38	a	Urea	2000 - 2500	
b	TSP/SP36	33	34.02	b	TSP/SP36	2500	
c	KCL	32	32.99	c	KCL	4500-5000	
d	NPK	25	25.77	d	NPK	1900-6800	
e	Others	0	0.00				
2	Total Fertilizer Use per Hectare based on standard composition			7	Satisfaction of Fertilizer Price		
a	Urea	17	17.53	a	Expensive	58	Person 59.79
b	Urea+NPK	17	17.53	b	Quite Expensive	36	Person 37.11
c	Urea+ZA	8	8.25	c	Cheap	0	Person 0.00
d	Urea+TSP+KCL	32	32.99	d	No Answer	3	Person 3.09
e	Urea+TSP+ZA	1	1.03				
f	Urea+TSP+KCL+NPK	2	2.06				
g	Urea+TSP+KCL+ZA	11	11.34				
h	NPK	6	6.19				
i	No Answer	3	3.09				
3	Habit of Purchasing Fertilizer			8	Expected Shape of Fertilizer		
a	Agent/Distributor	87	89.69	a	Solid	85	Person 87.63
b	Cooperative	0	0.00	b	Liquid	6	Person 6.19
c	Fertilizer Shop	10	10.31	c	Solid / Liquid	2	Person 2.06
				d	No Answer	4	Person 4.12
4	Satisfaction Level of Using Fertilizer today			9	Habit of Purchasing Fertilizer		
a	Satisfied	26	26.80	a	Anytime Need It	94	Person 96.91
b	Unsatisfied	66	68.04	b	Certain Time to be stored as stock	0	Person 0.00
c	No Answer	5	5.15	c	No Answer	3	Person 3.09
5	Deficiencies of fertilizers used			10	Decision-making mechanisms of using and purchasing fertilizer		
a	Lack of Production	13	13.40	a	Purchasing directly	14	Person 14.43
b	Late Production	1	1.03	b	3 X in a year	5	Person 5.15
c	The result is not optimum	6	6.19	c	In Rainy Season	1	Person 1.03
d	Quick mushy	2	2.06	d	Based on Fertilizing Schedule	4	Person 4.12
e	Not durable to production	2	2.06	e	If the plants need it	1	Person 1.03
f	Late Absorption	4	4.12	f	If need it	5	Person 5.15
g	Fast Steam	2	2.06	g	No Answer	67	Person 69.07
h	Proper, but less available	17	17.53				
i	No Answer	50	51.55				

no provided as much as 17 people (17.53 people); there is still lack of fertilizer performance to production increase as many as 13 people (13.40%); there are less maximum results as much as 6 people (6.19%); it is slow to absorb as much as 4 people (4.12%); it is fast mushy and evaporates quickly as well as does not last long on the production respectively of 2 people (2.06%); slow production is 1 person (1.03%), while the balance of 50 people did not answer.

- 6) The reasons for dissatisfaction are: the price aspect, as many as 58 people (59.79%), they said it was too expensive and only 36 people (37.11%) are stated enough, the remains are 3 people did not answer.
- 7) Consumers purchased fertilizers with the urea price of between Rp. 2,000 - Rp. 2,500; TSP / SP36 as much as Rp. 2,500; KCL between Rp. 4,500 to 5,000, and NPK between Rp. 1,900 - Rp. 6,800.
- 8) The purchasing pattern made by consumers is: when they needed as many as 94 people (96.91%), they did not set a specific time schedule and keep stock, the remains 3 people did not answer.
- 9) The mechanism of decision making in purchasing and using fertilizer is:
As many as 14 people purchased it direct (14.43%), 5 people purchased 3 times in a year (5.15%), 5 people purchased when needed (5.15%), 4 people purchased it when it is appropriate with fertilization schedule (4.12%), 1 person purchased it when it rains and 1 person, if the plants need to be cultivated (1.03%) and 67 people (69.07%) did not answer.
- 10) The form of fertilizer desired: 85 people like solid fertilizer (87.63%), 6 people like liquid fertilizers (6.19%), 2 people maybe like liquid or solid (2.06%) and 4 people did not answer.

Consumer perceptions and desires of people tea plantations on the CMF characteristics (Table 14) can be identified as follows:

Product aspect:

- Of the 97 respondents, 89 people or 91.75% do not know about the existence of CF, 4 people (4.12%) already know from their friend, and 4 people (4.12%) did not answer.
- 78 people expected CF Physical is Granulees (80.41%), 12 people (12, 37%) expected

Granulees and frill, and 1 person (1.03%) expected liquid;

- 57 people desired size packaging 25 (58.76%), 35 people (36.08%) are 50 kg and 3 people (3.09%) did not answer.
- (53.61%) 52 people like long shelf life, its strong to be stored between 3-6 months, 24 people (24.74%) like 6-12 months, 13 people (13.40%) like over one year, 5 people (5.15%) like 3 months and 3 people did not answer.

Aspects of Price:

- Respondents expect the price under Rp. 5,000.00 as many as 96 people (98.97%) and one person did not answer (1.03%).
- Respondents expect payment could be through credit as many as 95 people (97.94%) and 2 (2.06%) did not answer.

Promotional aspects:

- The expected promotion type is directly at the location of 68 people (70.10%), through farmer groups of 25 people (25, 77%), through demoplot is 2 persons (2, 06%) and 2 people did not answer;
- The expected distribution system is through the cooperative as many as 63 people (64.95%), through an agent / distributor as many as 12 people (12.37%), through farmer groups as many as 10 people (10.31%), through a cooperative or an agent of 7 people (7.22%) and 1 person did not answer.

Based on the consumers purchase characteristics and consumers' perception of CMF today, it can be formulated CMF marketing strategy in people tea plantation as follows:

- Physical CF is the Granulees form, there are 2 types of size packaging 25 kg and 50 kg with a long shelf life between 3-6 months.
- The amount of the selling price in the consumer under Rp. 5,000, with the payment system can be through credit.
- The promotion type is done directly at the site of experimental gardens (plots).
- Distribution is carried out through two channels, namely cooperatives and agent / distributor.

whereas the marketing aspect for large private and country plantations, although there may be some similar aspects, but it is estimated there will be some aspects that need to be adjusted, especially in the decision-making process in purchasing.

Table 14. Consumer perception on CMF

No	Description	Total	%	No	Description	Total	%
1	Information on mineral fertilizer			6	Estimated Feasible Price for CMF per Kg		
a	Known	4 Person	4.12	a	under Rp. 5,000	96 Person	98.97
b	Unknown	89 Person	91.75	b	Rp. 5,000 - Rp. 7,500	0 Person	0.00
c	No Answer	4 Person	4.12	c	Rp. 7,500 - Rp. 10,000	0 Person	0.00
				d	Over Rp.10,000	0 Person	0.00
				e	No Answer	1 Person	1.03
2	Information source of CMF			7	Purchasing System		
a	Friends	4 Person	10.31	a	Cash	0 Person	0.00
b	Socialization Event	0 Person	0.00	b	Credit	95 Person	97.94
c	TV	0 Person	0.00	c	Others	0 Person	0.00
d	Others:	0 Person	0.00	d	No Answer	2 Person	2.06
e	No Answer	93 Person	79.38				0.00
3	Physical Characteristics of CMF			8	Expected type of promotion and socialization?		
a	Granule	78 Person	80.41	a	Demoplot	2 Person	2.06
b	Frill	0 Person	0.00	b	At Site	68 Person	70.10
c	Briket	0 Person	0.00	c	Farmers	25 Person	25.77
d	Liquid	1 Person	1.03	d	Others	0 Person	0.00
e	Granule dan Frill	12 Person	12.37	e	No Answer	2 Person	2.06
f	No Answer	6 Person	6.19				0.00
4	Expected Size Packaging			9	A proper distribution system		
a	Packaging 25 Kg	57 Person	58.76	a	Cooperative	63 Person	64.95
b	Packaging 50 Kg	35 Person	36.08	b	Agent/ Distributor	12 Person	12.37
c	Packaging 25 or 50 kg	2 Person	2.06	c	Supplier	4 Person	4.12
d	No Answer	3 Person	3.09	d	d. Others (Farmers)	10 Person	10.31
5	Expected Long shelf life			e	cooperative or Agent	7 Person	7.22
a	3 months	5 Person	5.15	f	No Answer	1 Person	1.03
b	3-6 months	52 Person	53.61				
c	6-12 months	24 Person	24.74				
d	Over 1 tahun	13 Person	13.40				
e	No Answer	3 Person	3.09				

CONCLUSION

Based on the results of the study, it can be concluded that the market and competition aspects of manufacture technology for Compound Fertilizer-Based Mineral (CF) is feasible to proceed to the next stage.

If this technology will proceed to the commercial stage that can generate revenue, it is advisable to do the following things:

- a) market testing (market test), which produces CF in real terms in small quantities and marketed to the actual market. It is aimed to obtain market response on the specification of CF compared to consumers needs and desires, so as to avoid the high risk of failure;

- b) doing a related economic studies review to the availability of raw materials.

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