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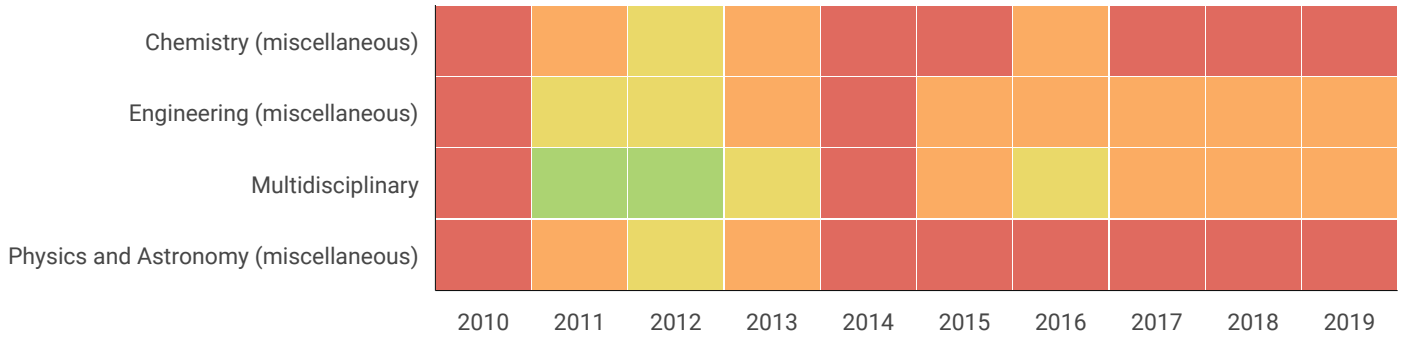

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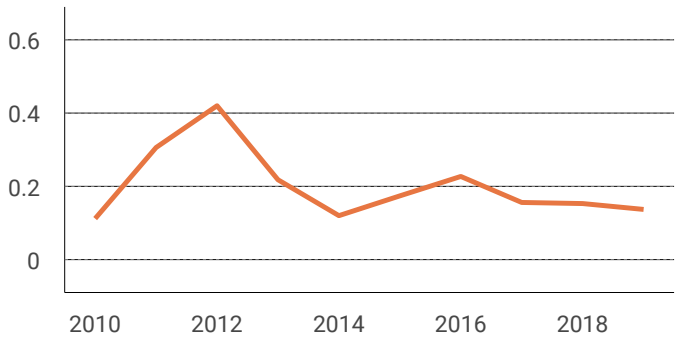

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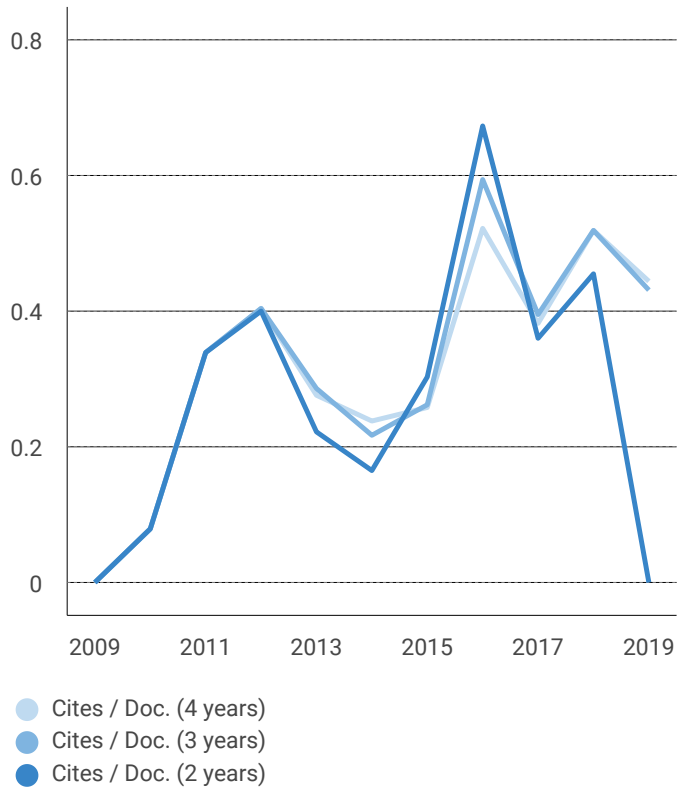

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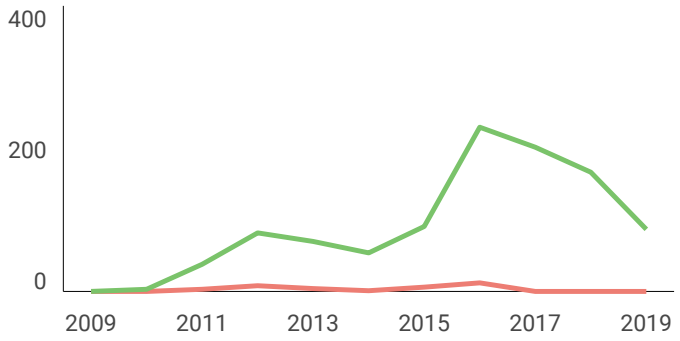

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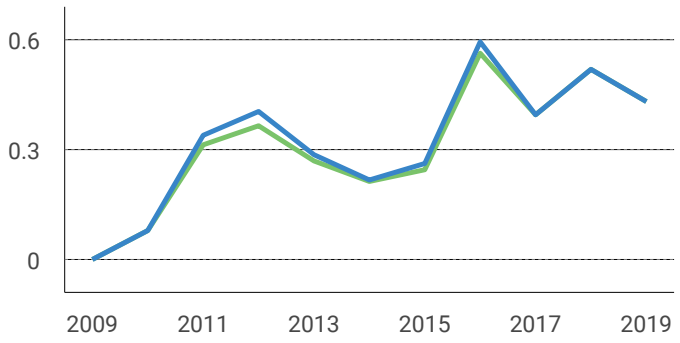

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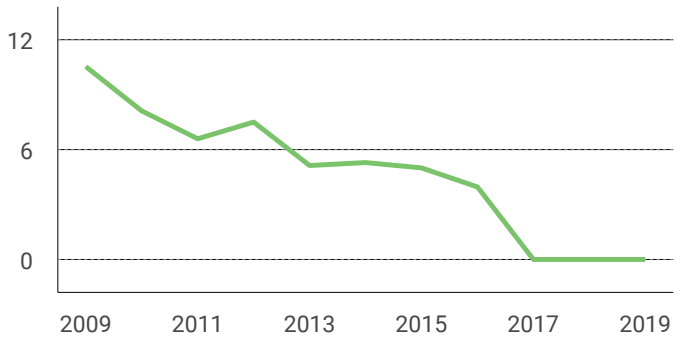

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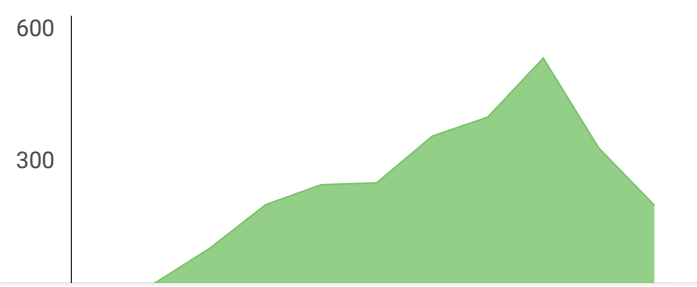

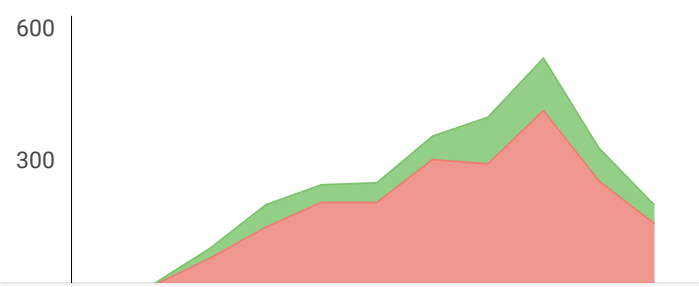

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Abstract

Economic Phenomenon of Bird's-Eye Chili Pepper (*Capsicum annum*) as Strategic Commodity in Indonesia

Authors : Ria Indriani Natsir, Rahim Darma, Yunus Musa and Nixia Tenriawaru

Abstract: Indonesian people is the biggest consumer of spice, especially, bird's-eye chili pepper. Therefore, bird's-eye chili turned out as one of the strategic commodity of Indonesia. As the second biggest chili and bird's-eye chili producer after China, Indonesian economic inflation is

significantly influenced by bird's-eye chili commodity. Bird's-eye chili market price highly fluctuates from 500-100.000 IDR/kg. Its contribution to country inflation was 0.35% from 3.02% in 2016. Bird's-eye chili has high potential as anexport commodity with 3.41 kg/year per capita production and 1.26 kg/year per capita consumption. The efforts to solve bird's-eye chiliprice fluctuations are to increase the supply by improving bird's-eye chili production by optimizing bird's-eye chili cultivation in all seasons. The regulation about bird's-eye chili market price is highly required to help increasing economy. It is also required to improve crop land for bird's-eye chili, not only for massive production but also for home production. Bird's-eye chili can be imported to fulfill market needs either. Thus, for balancing the economic rate of bird's-eye chili, it is required to to build the reliable and sustainable partnership between farmers, government, distributors and other parties. This improvement is expected to increase the production and distribution process to all area which can increase the bird's-eye chili economical value.

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Economic Phenomenon of Bird's-Eye Chili Pepper (*Capsicum annum*) as Strategic Commodity in Indonesia

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90245 Makassar, Indonesia

Abstract: Indonesian people is the biggest consumer of spice, especially, bird's-eye chili pepper. Therefore, bird's-eye chili turned out as one of the strategic commodity of Indonesia. As the second biggest chili and bird's-eye chili producer after China, Indonesian economic inflation is significantly influenced by bird's-eye chili commodity. Bird's-eye chili market price highly fluctuates from 500-100.000 IDR/kg. Its contribution to country inflation was 0.35% from 3.02% in 2016. Bird's-eye chili has high potential as anexport commodity with 3.41 kg/year per capita production and 1.26 kg/year per capita consumption. The efforts to solve bird's-eye chiliprice fluctuations are to increase the supply by improving bird's-eye chili production by optimizing bird's-eye chili cultivation in all seasons. The regulation about bird's-eye chili market price is highly required to help increasing economy. It is also required to improve crop land for bird's-eye chili, not only for massive production but also for home production. Bird's-eye chili can be imported to fulfill market needs either. Thus, for balancing the economic rate of bird's-eye chili, it is required to to build the reliable and sustainable partnership between farmers, government, distributors and other parties. This improvement is expected to increase the production and distribution process to all area which can increase the bird's-eye chili economical value.

Key words: Phenomenon, strategic, chili, fluctuation, price, economic

INTRODUCTION

Bird's-eye chili pepper (*Capsicum annum*) or locally known as cabai rawit in Indonesia has become a strategic commodity due to the worldwide highest consumption rate in Indonesia. The production of bird's-eye chili is 869.938 tons with the crop lands sized 134.869 ha in 2015 (Anonymous, 2017). This makes Indonesia becomes a second highest country with crop contribution 9.22%, after China 53.97%. In the ASEAN, Indonesia is the highest country with the crop cultivation of chili plants and green pepper with contribution average 96.22% (Anonymous, 2015a).

Actually, bird's-eye chili has a good economic prospect if there are no obstacles like the following. These constraints are unpredictable extreme weather and have an effect on the uncertainty of production quantities. Bird's-eye chili price changes are very fluctuating (Chen *et al*., 2017; Li *et al*., 2016; Gao *et al*., 2017) from Rp. 10,000-120,000 IDR (Anonymous, 2017). These price fluctuations start from the rising prices for 2-3 months and then drop for the next 2-3 months (Farid and Subekti, 2012).

These price fluctuations occur almost every year but there is no solution from the government to control price fluctuations. Generally, the government will continue to monitor prices and import bird's-eye chili to fulfill market needs. Statistical data on agricultural exports in 2001-2013 showed that bird's-eye chili is the dominant agricultural commodity imported by Indonesia besides rice, sugar, corn, soybeans, beef and onion, although, its import value is the smallest and its growth rate decreased in 2001-2004 (Anonymous, 2014).

In spite of the fact that bird's-eye chili is one of the strategic commodities but bird's-eye chili does not get great attention from the government. Due to bird's-eye chili is not like the commodities of rice, corn and soybeans that are included in the national priorities of food. There has been no significant effort from the government in

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regulating the bird's-eye chili standard price which leads the price to fluctuate very easily due to the price regulation which is handed to the market completely. This is dissimilar the commodities of rice, corn and soybeans that have a base price. Therefore, this study aims to describe the status and economic phenomena of bird's-eye chili development in Indonesia.

The strategic commodity of bird's-eye chili can be considered by the policymaker, so that, the chili farmer can receive production incentives fund in order to increase their production. Therefore, it can stabilize the price of bird's-eye chili, improve the farmer's economy and increase the country Foreign exchange (devisa).

Literature review: In spite of consumed less than other crops, fluctuating bird's-eye chili prices have an effect on economic inflation (Iraola and Santos, 2017). Bird's-eye chili included into seven Indonesian strategic commodities which consisted of: rice, corn, soybeans, beef, sugar, onion and bird's-eye chili (Supriyanto, 2015). Strategic commodities are commodities which have a big role in the national economy which has a big impact on inflation and drains the spending on state expenditure (Farida, 2014; Anonymous, 2015c). Price fluctuations of strategic commodities have made consumers and farmers as producers are affected by economic problems.

Strategic products have several criterias as follows. The product must have a significant role in improving the country's economy, optimizing food security and poverty alleviation in a sustainable manner. These products are expected to minimalize the dependence on imports and increasing exports rate (Le and Chang, 2016). The indicator of the role of a product in the stabilization of food security is its contribution in the provision of nutrients, especially calories and protein for the population. The contribution of a product to the supply of total calories and protein nationally can be an appropriate indicator of the role of food security (Farida, 2014).

The indicator to measure the role of an agricultural product in poverty alleviation is through its contribution in creating job vacancies. The existence of employment is a requirement to earn income that can reduce the poverty rate and improve Indonesian economy. The contribution of a product to occupy labors in the agricultural sector can serve as an indicator of its strategic role in reducing poverty and improving the society economic quality (Roy and Roy, 2017; Farida, 2014).

The important role of agricultural products for the Indonesian economy is measured by its contribution to the total value of agricultural production. Indonesia's economy rate much depends on agricultural business because Indonesia is an agrarian country, so that, the economic quantity can be determined by the value of production of agricultural products. The higher the contribution of an agricultural product is to the total value of production, the more important the role of the product in improving the country economy (Farida, 2014).

The development performance is measured based on vulnerability, fragility and sustainability. The fragility is about the product endurance in the international market fluctuations. The fragility can be measured by large-scale import incident fluctuations. Large-scale import incidents indicate a product's inability to survive in the pressures of competing products which imported from other countries. The higher the large-scale imports fluctuation, the more fragile the existence of such products in the country. Sustainability is an indicator of long-term domestic production existence. Sustainability can be measured based on the trend of production by time. The decreasing product volume is an indication that the existence of the product is being threatened. The higher rate of product declines, the faster the product becomes extinct (Farida, 2014).

MATERIALS AND METHODS

The research was conducted in December, 2016 until July, 2017. This research used descriptive method through secondary data survey method and literature study with a qualitative approach. Secondary data were obtained from BPS, Agricultural Technology Assessment Institute (BPTP), books, scientific journals, previous research results and information from various stakeholders. Data were collected by observation, interview bird's-eye chili seller, the employees of BPT Agriculture Department and documentation.

RESULTS AND DISCUSSION

Bird's-eye chili commodities status: The seven strategic commodities of Indonesia are included rice, corn, soybeans, beef, sugar, onions and bird's-eye chili (Le and Chang, 2016; Haris and Tao, 2016; Artsiomchyk and Zhivitskaya, 2015). Bird's-eye chili commodities are not included yet in the six leading commodities in the food security program consists of tuna, shrimp, oil palm, coffee, cocoa and tea (Le and Chang, 2016; Haris and Tao, 2016; Supriyanto, 2015).

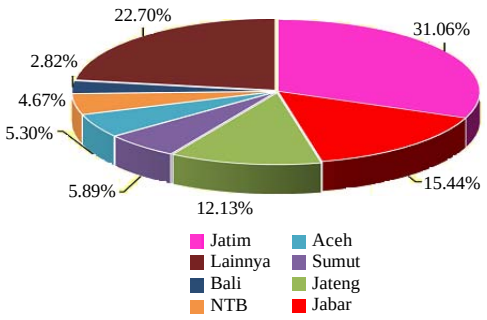

Fig. 1: The bird's-eye chili production in several provinces in Indonesia during 2010-2014

Bird's-eye chili is an important agricultural crop which is produced in large scale and high value in the world and in Indonesia (Xavier and Galvez, 2016; Vos and Duriat, 1995; Kothari *et al*., 2010). Bird's-eye chili production in Indonesia increased from 800,473 tons in 2014 to 869,938 tons in 2015, 3.41 kg/capita/year production (Anonymous, 2017). The area of bird's-eye chili plantation reached 20% of total vegetable crops throughout Indonesia. In 2014 and 2015, the bird's-eye chilicultivation area were 134,882 and 134,869 ha, respectively (Anonymous, 2017). Along with its cultivation area, bird's-eye chili production in Indonesia is more dominated by provinces in Java and Sumatera (Fig. 1).

Figure 1 shows that East Java was the largest province of bird's-eye chili producers since it produced bird's-eye chili 31.06% of total bird's-eye chili cultivation (206,852 tons) during 2010-2014. The following provinces were West Java 15.44%, Central Java 12.13%, North Sumatra 5.89%, Aceh 5.30%, Nusa Tenggara Barat 4.67% and Bali 2.82%. Production from the above provinces reached 77.3% of the total Indonesian bird's-eye chili production while the other provinces contributed of 22.7%.

Nevertheless, the production of bird's-eye chili outside Java shows a fairly rapid development. The growth of bird's-eye chili productivity outside Java is 5.21% higher than Java which is only 3.60% of all production (Anonymous, 2015a). Outside Java, the province which has the potential as a central area of bird's-eye chili production was South Sulawesi and Gorontalo Province with total production of 26,570 tons and 8,238 tons, respectively in 2015 (Anonymous, 2015b).

This means that there is considerable potential for the development of bird's-eye chili outside Java. South Sulawesi is geographically located in eastern Indonesia, most of which are chili consumers who may have a competitive advantage (Liu and Mantecon, 2017).

Indonesia is the largest country in ASEAN which has a harvested area of bird's-eye chili and green pepper with 96.22% contribution to the total area of ASEAN chili peppers and green peppers. The second and third positions are occupied by the Philippines and Malaysia with a total contribution of 2.09 and 1.13%, respectively. The three countries provide 99.43% cumulative contribution to the total area of ASEAN chili peppers and green peppers (Anonymous, 2015a).

China is the largest country producer of bird's-eye chili and green pepper in the world with 53.97% contribution of the total harvested area in the world. The second position is occupied by Indonesia with a contribution of 9.22%. Then, Mexico in third place contributed 5.49% to the world's chili harvest area, followed by Ethiopia 4.62%, Turkey 3.74 and Nigeria 2.48%. In addition, the contributions from other countries are <3% (Anonymous, 2015a).

Bird's-eye chilis is one of the vegetable commodity which has good economic value due to Indonesian people tend to like spicy-flavor food (Kothari *et al*., 2010; Le and Chang, 2016). This makes the bird's-eye chili needs per capita in Indonesia is very fluctuating from year to year. The bird's-eye chili consumption continues to increase along with the increase of Indonesian population. The consumption of bird's-eye chili in Indonesia in 2015 was 1.28-1.51 kg/capita/year or 0.25-0.29 ounces per capita per week (Anonymous, 2015b). However, perhaps due to bad cultivation, bird's-eye chili consumption was decreased to 1.26 kg/capita/year or 35 g/capita/week in 2016. Consumption of fresh chili is generally not replaced by processed products, even in certain areas is very fanatical with certain types such as in West Sumatra for curly pepper and Gorontalo for chili (Farid and Subekti, 2012).

There are so many industries used bird's-eye chili as raw material. Processed products of bird's-eye chili consist of semi-processed products and processed products. Semi-processed products mainly focused on the addition of industrial purposes such as chips seasoning, instant noodle industry, beverages, medicines, canned food and packaged foods (dried chili, chilipowder and chili paste). Processed products examples are chili sauce, driedchili and shredded-chili (Anonymous, 2012; Tubagus *et al*., 2016). Therefore, bird's-eye chili is one of the important products for Indonesian market that affects inflation rate (Iraola and Santos, 2017).

The government made many efforts and policies in order to increase the production of bird's-eye chili with the development of special horticulture area of bird's-eye chili to guarantee the stock availability (Rahmah, 2016). The Ministry of Agriculture also established the program

of 10 million polybags of bird's-eye chili self-planting (Gertam cabai) to Indonesian people using home yard and state-funded bird's-eye chili cultivation improvement area. However, the results of the government policies have not been significant. As an important commodity, bird's-eye chili must be continuously strived for development in various regions of Indonesia in order to obtain the production supply can fulfill the increasing consumption and national market demand (Courtonne *et al*., 2015; Artsiomchyk and Zhivitskaya, 2015; Haris and Tao, 2016).

Commodities phenomenon of bird's-eye chili: The demand for bird's-eye chili tends to increase 10-20% from normal needs ahead of Islamic Fasting month (Ramadhan), religious holidays and holiday moments. To fulfill the needs of bird's-eye chili, there should be an adequate supply that influenced by the amount of production. If the supply of chili is reduced or lower than the demand, the price will increase. The imbalance between the amount of production and consumption is often the source of problems in the market causing price fluctuations (Djuric and Gotz, 2016; Farida, 2014).

There are two growing seasons for the cultivation of bird's-eye chili, the massive planting season (December-January) and the slight planting season (July-August). The massive planting season can be harvested in April-May while the slight planting season can be harvested in July-August (Hasdiana, 2011). With the pattern of such a growing season there is a potential increase in the price of chilies occurring at the end and beginning of the year while decreasing prices occur in mid-year (Farid and Subekti, 2012).

There had been a rise in the price of bird's-eye chili red throughout Indonesia in 2016. The fluctuations in bird's-eye chili prices in three cities in Indonesia can be seen in Fig. 2.

Figure 2 shows the price of bird's-eye chili fluctuated from Rp. 10,000-60.000 IDR/kg only in March-December 2016 in South Jakarta, Tomohon and Gorontalo (Anonymous, 2017). Meanwhile, the price of bird's-eye chili in Gorontalo Province has a competitive price compared to Jakarta and North Sulawesi, ranging from Rp. 10,000-60,000 (Liu and Mantecon, 2017; Li *et al*., 2016).

In January 2017, the price of bird's-eye chili in various regions such as Sukabumi, Medan, Bojonegoro, Tegal, Semarang and Solo was still high around Rp. 70,000-100.000 IDR/kg. Even in Sorong, West Papua, bird's-eye chili was priced at 200,000-250,000 IDR/kg. On the other hand, large red peppers and curly peppers are still normally worth about 45,000 IDR/kg. High prices above 100,000 IDR/kg of chili are also happened in Tasikmalaya, Padang, Palembang, Temanggung and Yogyakarta. Prices of bird's-eye chili above 120,000 IDR/kg also occur in Kupang and Pangkalpinang (Anonymous, 2017).

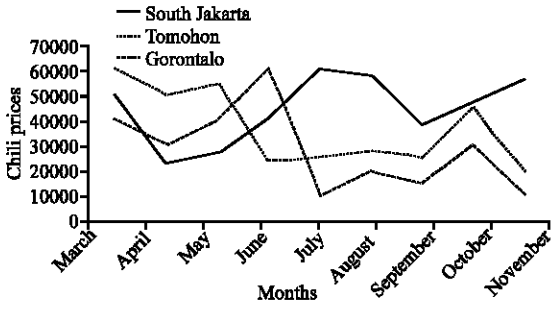

Fig. 2: The price of bird's-eye chili in some regions in 2016

Fluctuations in the price of bird's-eye chili in various regions affect the occurrence of inflation. Bird's-eye chili was the biggest contributor to inflation throughout 2016. Bird's-eye chili contributed 0.35% inflation from 3.02% of total inflation in 2016 (Anonymous, 2017).

This fluctuation phenomenon is caused by a decreased supply of bird's-eye chili while constant and continuous demand every day, even increasing in certain seasons (Djuric and Gotz, 2016; Farid and Subekti, 2012). Chili supply used to decreases during the rainy season since rice cultivation is more prioritized at that time. In the rainy season, chili cultivation is more potentially affected by the disease while in the dry season the cultivation of chili is potentially infected by pests (Farid and Subekti, 2012). Extreme weather factors greatly affect the chili harvest that eventually increases the price due to many farmers failed to produce enough good-quality chili. In addition, the bird's-eye chili scarcity is caused by low seed quality, high production cost, limited labor, low technology dissemination, long distribution channels, high transportation costs, lack of infrastructure and lack of farmers knowledge about proper production (Kothari *et al*., 2010; Vos and Duriat, 1995).

In addition, the crop scarcity is caused by middlemen, massive collectors and large industries that monopolize the supply of bird's-eye chili from farmers. There is an indication of cartel practice, i.e., six companies agreed to buy from large collectors for 181,000 IDR/kg simultaneously. Another indication is the bird's-eye chili price had not decreased since January 2017, in fact the supply in some Indonesian parent markets is stable at 40 tons per day. In addition, the government's policy of

stabilizing prices and supplies in chili-deprived areas led to the rise of bird's-eye chili prices in surplus areas as happened in Gorontalo.

Several attempts are made to reduce the fluctuation of bird's-eye chili prices by improving and planting quality in all seasons, establishing a bird's-eye chili pricing policy as in all food commodities there should be market monitoring operations from the government to minimize cartel practices, developing reliable and sustain partnerships between the government and farmers, improving the distribution between surplus areas and chili-deprived areas, developing horticultural areas in accordance with government programs, maximizing processing during abundant production to increase crop endurance and importing products (Rahmah, 2016; Anwaruddin *et al*., 2015; Anonymous, 2012).

CONCLUSION

Bird's-eye chiliis a strategic commodity due to public high interest. In 2015, the production and cultivation of bird's-eye chili in Indonesia amounted to 869,938 tons and 134,869 ha, respectively. This obtained 3.41 kg/capita/year of capita production. Due to this condition, Indonesia ranked as second highest chili-consumer after China and first in ASEAN. The consumption of bird's-eye chili in Indonesia in 2015 was 1.28-1.51 kg/capita/year or 0.25-0.29 ounces per capita per week.

Due to high demand of bird's-eye chili there is a fluctiation price in the market affecting the economic inflation. Therefore, the government regulates the policies in order to increasing bird's-eye chili production but have not been significant yet.

There are the fluctuation of high price of bird's-eye chili ranged from Rp. 10.000-120.000 IDR/kg. This price gave contribution 0.35% from 3.02% of total inflation in 2016. This phenomenon is caused by unsuitable weather and cultivation time, uneven crops distribution, cartel practices, crops monopoly by the middlemen.

For reducing the fluctuation of bird's-eye chili prices can be done by improving and planting quality in all seasons, establishing a bird's-eye chili pricing policy as in all food comodities. Besides that, there should be market monitoring operations from the government to minimize cartel practices, developing reliable and sustain partnerships between the government and farmers, improving the distribution between surplus areas and chili-deprived areas, developing horticultural areas in accordance with government programs, maximizing processing during abundant production to increase crop endurance and importing products.

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