

CONSUMER PREFERENCES ON NEW CHILLI VARIETIES OF BENGKULU UNIVERSITY

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ABSTRACT

The University of Bengkulu (UNIB) research team has obtained a list of chilli varieties from the Ministry of Agriculture for the superior varieties produced, namely UNIB C H13, UNIB C H53, UNIB C H63, Dwiguna UNIB, and UNIB C H65. Chilli cultivation by farmers is generally done in monoculture because it has an excess of high plant productivity, the shape and size of the product are relatively uniform and can reduce production costs. However, monoculture cropping patterns also have weaknesses. Among others are causing high attacks of pests and diseases which later can also cause a decrease in crop productivity. To solve this problem, a combination of varieties of polyculture planting patterns is recommended. The consequence of a variety of combinations is the lack of chilli uniformity both in the shape and size. This research was conducted to 1) Analyze the perception of consumers on the attributes of chilli, and 2) examine and determine which chilli products are selected and bought by consumers based on shape, and size. Forty consumer respondents were taken by an accidental sampling technique. Consumers are asked to assess 10 types of the UNIB chilli varieties, both cultivating by monoculture and polyculture among varieties. The results showed that the size and shape attributes were important as the basis for the decision to buy chilli, while the uniformity attributes are not surely as consideration. The preferable chilli variety purchased due to their size, shape and desire was UNIB C H13. Further, the combination of UNIB C H13 and UNIB C H53 are desired to be purchased by consumers. This type of combination should be cultivated by farmers because it is resistant to pests, high productivity and preferred by consumers.

Keywords: *chilli, monoculture and polyculture, consumer preference*

ABSTRAK

Tim peneliti Universitas Bengkulu (UNIB) telah memperoleh daftar varietas cabai dari Kementerian Pertanian untuk varietas unggul yang dihasilkan, yaitu UNIB C H13, UNIB C H53, UNIB C H63, Dwiguna UNIB, dan UNIB C H65. Budidaya cabai oleh petani umumnya dilakukan secara monokultur karena memiliki kelebihan produktivitas tanaman yang tinggi, bentuk dan ukuran produk relatif seragam dan dapat mengurangi biaya produksi. Namun, pola tanam monokultur juga memiliki kelemahan. Banyak lainnya menyebabkan serangan hama dan penyakit yang tinggi yang nantinya juga dapat menyebabkan penurunan produktivitas tanaman. Untuk mengatasi masalah ini, kombinasi varietas pola penanaman polikultur direkomendasikan. Konsekuensi dari berbagai kombinasi adalah kurangnya keseragaman cabai baik dalam bentuk dan ukuran. Penelitian ini dilakukan untuk 1) Menganalisis persepsi konsumen terhadap atribut cabai, dan 2) menguji dan menentukan produk cabai mana yang dipilih dan dibeli oleh konsumen berdasarkan bentuk, dan ukuran. Empat puluh responden konsumen diambil dengan teknik accidental sampling. Konsumen diminta menilai 10 jenis varietas cabai UNIB, baik budidaya monokultur maupun polikultur antar varietas. Hasil penelitian menunjukkan bahwa atribut ukuran dan bentuk penting sebagai dasar pengambilan keputusan untuk membeli cabai, sedangkan atribut keseragaman belum tentu sebagai pertimbangan. Varietas cabai pilihan yang dibeli karena ukuran, bentuk dan keinginannya adalah UNIB C H13. Lebih lanjut, kombinasi UNIB C H13 dan UNIB C H53 diinginkan untuk dibeli oleh konsumen. Kombinasi jenis ini harus dibudidayakan oleh petani karena tahan terhadap hama, produktivitas tinggi dan disukai konsumen.

Kata kunci: *cabai, monokultur dan polikultur, preferensi konsumen*

INTRODUCTION

The centers of chilli production in Indonesia are found in several provinces in Java and Outside Java. Bengkulu Province is the seventh producers. The total contribution in some of these provinces amounted to 79.15% of Indonesia's production. Based on the average production in 2010-2014, West Java contributed 22.54%, North Sumatra 18.15%, Central Java 14.71%, East Java 9.66%, West Sumatra 5.62%, Aceh 4.42% and Bengkulu at 4.05% (Nuryati and Noviati, 2015). Furthermore, according to Nuryati and Noviati (2015) demand for chilli for household consumption in 2015 to 2019 is expected to increase by an average of 1.97%/year. The demand for chilli in 2015 amounted to 392.88 thousand tons and increase to 424.73 thousand tons in 2019. If comparing the chilli production to chilli imports dominated in the form of processed chilli, the domestic production is not sufficient to fullfil demand for chilli for further processing. For this reason, some efforts are required to increase chilli production. According to Saptana et al (2012), these efforts include: 1) Increasing the chilli planting area during the rainy season both on new land in other production centers and on existing land, 2) Extensive arrangements for production in the dry season, 3)

Stabilizing prices, and 4) Developing reliable and sustainable partnership institutions.

Increasing chilli productivity can be achieved by inventing of new high-yield varieties. New varieties should also be in accordance with the consumer preferences. Since 2007, the University of Bengkulu chilli researchers in collaboration with chilli researchers from the Bogor Agricultural Institute has conducted a series of studies to invent superior chilli varieties (Ganefianti et al., 2008). These series of studies have produced potential hybrids that have high yields (more than 10 tons/Ha) and resist to yellow curly leaf disease (Ganefianti et al., 2017). Hybrid seeds should also be immediately introduced to farmers and able to give an economic values. For this reason, a series of comprehensive studies are demanded.

An agricultural commodity farm is generally carried out with a monoculture cropping pattern. This cropping pattern can increase crop productivity, reduce costs and labor. On the other hand, the uniformity of cultivars causing plant pest organisms spread easily. To overcome this weakness, polyculture planting patterns can be implemented by planting various varieties in one area. Many studies show that planting varieties have resistance to different pests (Tutupary et al., 2004). Planting various plant varieties in one area can suppress plant pest organisms. This planting concept will be applied to the cultivation of chilli in this study. Monoculture and polyculture cropping system (combinations of varieties) produce products that have advantages and disadvantages, especially in terms of shape, size and, uniformity. The problem is that what types of chilli preferred by consumers are. This information can be used by farmers to decide and select a cultivation types for chilli.

Departing from above discussion, this research has two goals, firstly, analyzing consumer's views on the chilli attributes. Secondly, this research is aimed at determining consumer preference on shape, size and uniformity of chilli products to buy. This information will later become a reference for farmers to cultivate what types of chilli on their land.

RESEARCH METHOD

The study was conducted in Bengkulu city where the University of Bengkulu established and its superior chilli varieties (UNIB C H13, UNIB C H53, UNIB C H63, and UNIB C H65) have been tested planted in both monoculture (single variety) and polyculture (combination of varieties). All chilli types are planted organically. The types of chilli are described in Table 1. Meanwhile, the characteristics of each type of chilli are presented in Table 2.

The 40 (fourty) research respondents were selected using an accidental sampling. They are asked to rate 10 types of chilli. Research on consumer preferences is based on the characteristics of chilli produced including fruit color, spiciness level, fruit skin surface and assuming that each chilli type has similar

price. In other words, only the shape, size and uniformity attributes of chilli are examined. The production results of each cropping pattern are then conveyed to respondents to give an assessment/view on the importance level of these attributes and then asked which type of chilli is the most preferred by consumers to purchase. Then the data will be analyzed descriptively.

Table 1. Chilli Types of Single Variety and Combined Varieties

No.	Type	Variety	No.	Type	Variety
1.	K01	UNIB C H13	6.	K2	The Combination of UNIB C H13 and C H63
2.	K02	UNIB C H53	7.	K3	The Combination of UNIB C H13 and C H65
3.	K03	UNIB C H63	8.	K4	The Combination of UNIB C H53 and C H63
4.	K04	UNIB C H65	9.	K5	The Combination of UNIB C H53 and C H65
5.	K1	The Combination of UNIB C H13 and C H53	10.	K6	The Combination of UNIB C H63 and C H65

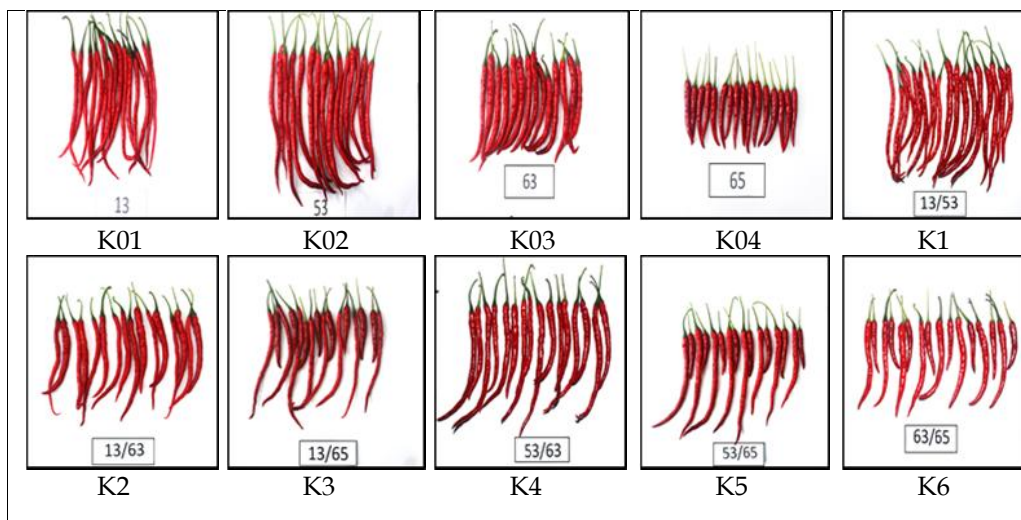
Table 2. Characteristics of Each Type of Chilli (Single Variety and Combination Variety)

Type	Fruit Length (cm)	Fruit Diameter (mm)	Fruit Skin Thickness (mm)	Fruit Weight (gram)	Productivity (ton/Ha)
K01	9.51	5.96	0.72	2.76	11.27
K02	13.47	6.62	0.74	3.96	8.90
K03	10.57	8.07	0.95	7.53	9.83
K04	5.46	6.41	0.64	1.58	6.41
K1	13.59	7.12	0.80	5.14	9.08
K2	10.77	4.92	0.69	3.74	6.47
K3	8.32	6.24	0.73	2.65	6.34
K4	9.58	6.58	0.68	3.16	5.37
K5	8.99	6.17	0.77	2.85	3.60
K6	7.05	6.04	0.67	1.90	4.35

Sumber : Primary Data, 2018.

The characteristics of each type shows that both monoculture (single variety) and polyculture (combination of varieties). The single variety type K01 (UNIB CH13) produces the highest productivity of 11.27 tons/ha. While for the combinations, type K1 (UNIB CH13 and UNIB CH53) provide the highest productivity of 9.08 tons/ha.

The appearance of each type of chilli studied can be seen in Figure 1. A single variety certainly has a uniform shape and size. If it is planted in combination, the chilli products produced have relatively little or no shape and size. However, there are several variety that have relatively similar shapes and sizes (eg UNIB C H13 and C H53), so if combined they will look uniform, both in shape and size.



Picture 1.

Appearance of all type UNIB Chilli Fruit Planted as Single Variety and Combination of Varieties

RESULT AND DISCUSSION

Characteristics of Respondents

Characteristics of respondents included gender, age, type of livelihood, place to buy chilli, purchasing frequency in one week, and the volume of chilli purchased. Characteristics of respondents in the study can be seen in Table 3.

Respondents consisting of 33 women (82%) and 7 men (18%). All respondents stated that they bought chilli for their own consumption with their families. Age of respondents ranged from 20-59 years with an average of 41.5 years. Most of the respondents (42%) have jobs as Civil Servants (PNS). The housewives (6%), private employees (3%) and others (students, not working or others) (14%). The dominant respondent most often buys chilli in the market (62%), while the other buy in the warung (20%) and buy it for the mobile vegetable vendor (18%). The frequency of buying chilli ranges from 1-7 times/week with an average of 2 times/week. On average, they purchase 1 kg with a range of 0.1-1.5 kg per week.

Table 3. Characteristics of Respondents

No	Characteristic	Amount (Person)	Percentage (%)	Average	Range
1.	Gender :				
	Female	33	82		
	Male	7	18		
2.	Age (Year)			41.5	20-59
3.	Type of Livelihood :				
	Civil Servant	17	42		
	Private Employee	3	8		
	Housewife	6	15		
	Other	14	35		
4.	Purchasing Place :				
	Market	25	62		
	Store	8	20		
	Vendors	7	18		
5.	Purchasing Frequency (times/week)			2	1-7
6.	Volume on Each Purchasing (Kg)			1	0.1-1.5

Sumber : Primary Data, 2018.

Consumer Perception on Chilli Attributes

Products that can fulfill their needs, will be liked and chosen by consumers. The concept of product attributes approach is based on consumer behavior studies by describing the quality product characteristics that consumers prefer. In the concept of product attributes, a product is examined by consumers as a unity of certain attributes. Understanding of consumer preferences is very important in the decision making process of key stakeholders, including producers/farmers and various related parties operating in the vegetable subsector (Adiyoga dan Nurmalinda, 2012).

Respondents as consumers in this study were asked to give perceptions on the importance of the chilli attributes. In this case, there are several a single variety and combinations of various chilli varieties from a certain land. The attributes include shape, size, shape uniformity, and size uniformity. The color, spiciness, and price of chilli are not included in the attributes studied, because they are relatively similar. The respondent answer on the importance of these attributes are categorized into Very Important, Important, Neutral, Not Important and Very Not Important.

Consumer perceptions on shape and size attributes are presented in Figure 2 and Figure 3, while the shape and size uniformity are shown in Figure 4 and Figure 5. Next, the result is explained as follows:

1. Shape

The consumer perceptions about the importance of chilli shape attributes is shown in Figure 2. The results showed that in term of shape attribute, the majority (62%) stated important, 18% stated neutral, 17% stated very importantly and 3% stated unimportant as a basis of purchasing decision. This research is in line with Adiyoga (2012) study which stated that the attributes that are considered based on their rank in the preference of red chilli are shape (which is straight) which is ranked third after skin color (dark red) and size (medium). Other attributes are skin surface (smooth), hardness (rather hard) and spiciness (spicy).

Adiyoga and Nurmalinda (2012) stated that shape attribute was ranked fifth after skin color, type, price and skin surface. But in this study skin color, price and skin surface were not used because for the UNIB varieties were relatively the same.

2. Size

In addition to the shape, size attribute also consumers concern. The research results of consumer perceptions on the importance of size attribute are presented in Figure 3. Similar to shape attribute, most respondents state that chilli size attribute is important (57%). For neutral/common and very important, each 20%, while only 3% say that the size of chilli is not important consideration to purchasing decisions.

Rofidah et al (2018) stated that the consideration for consumers to choose chilli is due to the fruit size and quality. Adiyoga (2012) also stated that the size of chilli fruit is one of the attributes that must be considered in improving the quality of chilli. The good quality of chilli will increase its competitiveness. The size of chilli that is being generally preferred by consumers. According to Pramanta et al (2017) fruits sorted according to their size will increase their economic value. Thus the size of chilli fruit is important in farming.

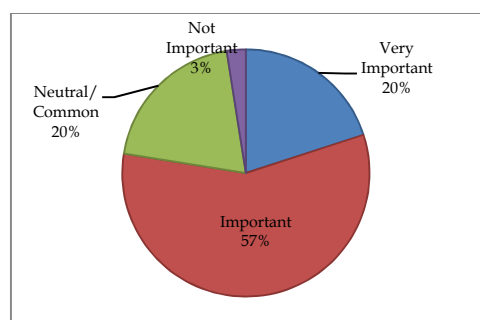
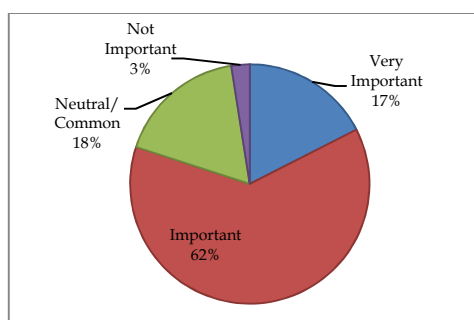


Figure 2.
Consumer Perception Distribution on
Shape Attribute

Figure 3.
Consumer Perception Distribution
on Size Attribute

3. Shape Uniformity

Chilli is bought in large quantities because the chillies are small. The results showed that the chillies to be purchased also need to be considered the uniformity of the shape. The form describes the quality of the fruit. As many as 40% stated that the uniformity of the shape of the chilli was considered neutral. It informs that shape uniformity factor is not important factor for consumer to buy chilli. However, approximately 38% respondent state that the uniformity of the shape of the chilli is important, 17% very important, while the rest (5%) stated it was not important (Figure 4).

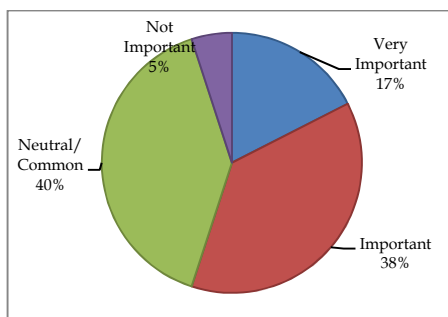


Figure 4.

Consumer Perception Distribution about
Shape Uniformity Attribute

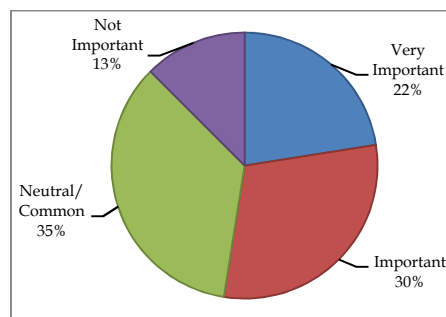


Figure 5.

Consumer Perception Distribution about
Size Uniformity Attribute

4. Size uniformity

Perceptions on the importance level of the size uniformity attributes were also analyzed to see whether size uniformity was used as a basis for consumers to buy chilli. The result show that as many as 35% stated that uniformity of size is something normal. Thirty percent respondent state that the size uniformity important, 22% states very important and 13% states not important (Figure 5). Some consumers say uniformity of size is important in purchasing decisions. Muzdalifah (2012) also states that farmers must be encouraged to produce the same product or uniform shape in order to increase product competitiveness, in addition to attributes of taste and color.

Consumer's Choice

Consumer's choice is based on the level of preference for shape and size. The next choice is the type of chilli which most wanted to buy. This analysis is

intended to find out from the ten types of chilli (single or combination), which types are most desirable for consumers. There are five choices that are sorted from the most liked or preferred. The results of this analysis will be the basis for farmers to cultivate the type of chilli based on the most preferred by consumers.

1. The Consumer's Choices order based on Shape

Respondents were asked to sort the choice of the type of chilli that was most preferred according to its shape. The results of the analysis can be seen in Figure 6.

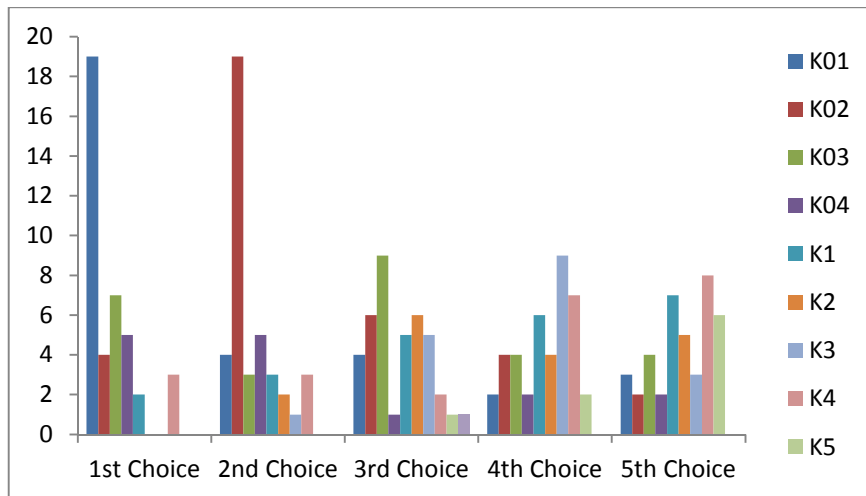


Figure 6.
Consumer's Choice based on the Shape

The top three types of chilli are preferred by consumers because their shape are K01 (UNIB C H13), K02 (UNIB C H53), and K03 (UNIB C H63). These three types have an elongated shape as in Figure 1 and it turns out that consumers like that shape. This is in line with the statement of Ameriana (2000) in Rahayu and Purnamaningsih (2018), where chilli with longitudinal and straight form is the most preferred chilli for household consumption.

2. The Consumer Choices Order based on Size

Figure 7 shows the results of the analysis of the order of choice of the most preferred types of chilli according to its size. The data on characteristics of the high-yielding varieties of UNIB chilli as shown in Table 1 shows that the UNIB Chilli C H13 has a medium size compared to the other three varieties. While the UNIB C H53 chilli is slightly larger, both the weight, length, and diameter of the fruit. While the other two varieties, namely UNIB C H63 and UNIB C H65 are smaller.

Most of the respondents chose chilli type K01 (UNIB C H13) which was most preferred based on its size. The next choice is type K02 (UNIB C H53), and then type K1 (the combination of UNIB C H13 and C H53) and type K3 (the combination of UNIB C H13 and C H65). This is in line with the results of Adiyoga (2012) research, consumers like medium-sized chilli. Although the types of K01 and K03 are a mixture of different varieties, because of their relatively similar size, they look uniform.

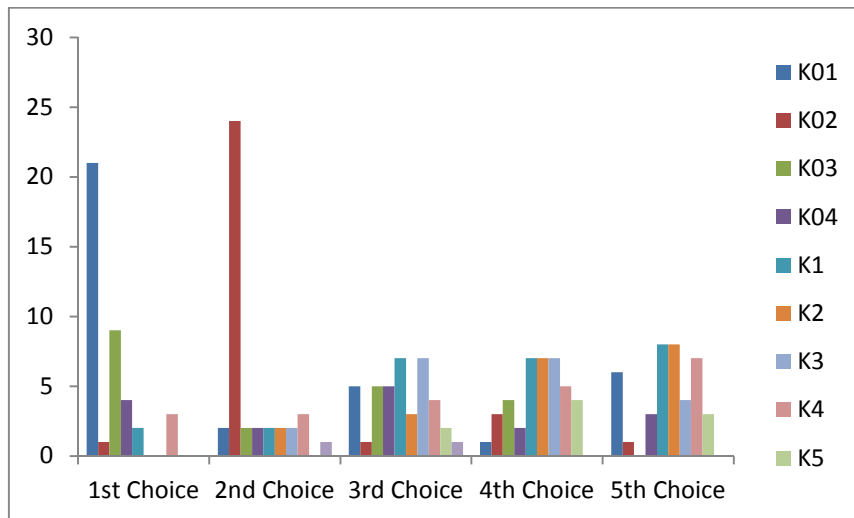


Figure 7.
Consumer's Choice based on the Size

3. The Consumer Choices order based on Chilli Wanted to Buy

The results of the analysis of the choice of consumers for the types of chilli based on the most wanted ones are presented in Figure 8. The first and second choices are K01 (UNIB C H13) and type K02 (UNIB C H53). While the third choice is type K1 (the combination of UNIB C H13 with UNIB C H53). Consumers do prefer single variety because the shape and size are the basis for deciding purchases as previously explained. Consumers also want to buy K1 types even if only the third option. Chilli type K1 is also chosen by consumers because the shape and size of the chilli both varieties are almost similar, so when mixed it looks uniform so it does not affect consumer preferences.

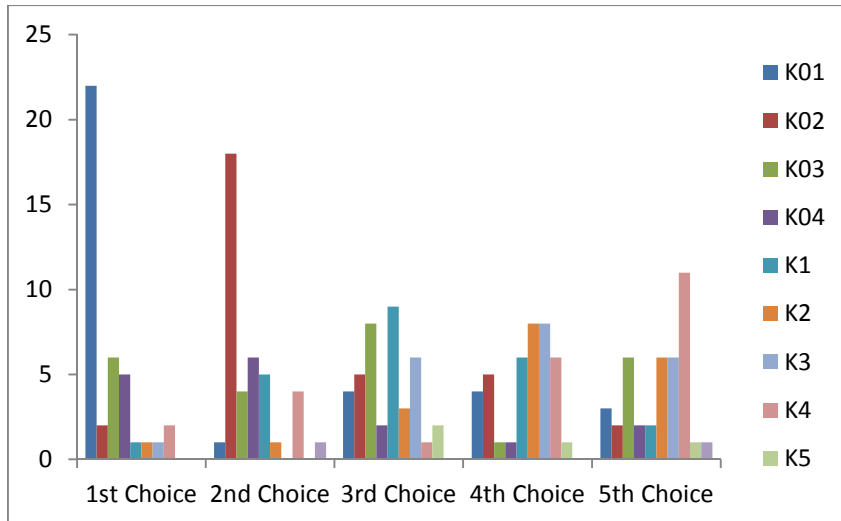


Figure 8.
Consumer's Choice based on Which Chilli Wanted to Buy

CONCLUSIONS AND SUGGESTIONS

Conclusion

The conclusions of the this study results are :

1. Most of consumers (62%) state that the chilli shape attribute is important as the basis for the decision to buy chilli and size attributes are also important (stated by 57% of consumers). While the attributes of shape and size uniformity are common in purchasing decisions.
2. The types of chilli which are consecutively selected by consumers for purchase are single type UNIB C H13, single type UNIB C H53 and a combination of UNIB C H13 with UNIB C H53.

Suggestion

Based on the research, in order to fulfill consumer desires and maintain the productivity of chilli on the land to remain high, farmers are advised to plant chilli with a combination of varieties of UNIB C H13 and UNIB C H53 because it provides benefits such as resistance to pest attacks, and of this type of combination are also preferred by consumers to buy because of their relatively similar shape and size so that they look uniform.

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