Fruitset Sains, 10 (5) (2022) pp. 321-330

Published by: IOCSCIENCE

Fruitset Sains : Jurnal Pertanian Agroteknologi

Journal homepage: www.iocscience.org/ejournal/index.php/Fruitset

Agronomic Appearance of Three Genotypes of Large Red Pepper (Capsicum annum L) in the Ciwidey Plateau

Deni Rahman[1], Lia Amalia[2], Tien Turmuktini[3]

[1]Mahasiswa Program Studi Magister Agroteknologi Fakultas Pertanian-Universitas Winaya Mukti, Indonesia

[2,3]Dosen Program Studi Magister Agroteknologi Fakultas Pertanian-Universitas Winaya Mukti, Jl. Raya Bandung-Sumedang Km.29 Tanjungsari 45362, Kab. Sumedang, Jawa Barat, Indonesia

E-mail: liamalia@unwim.ac.id

Abstract

This experiment aims to study the agronomic appearance of three genotypes of red chili plants in Ciwidey District, Bandung Regency, West Java Province. The research method used was an experimental method with a Simple Group Random Design (RAK), with three treatments repeated nine times. The data was analyzed with various fingerprints and continued with the Duncan Multiple Distance Test. The test material consisted of three genotypes of red chili, namely one of the new superior variety candidates, and two varieties belonging to the Agricultural Research and Development Institute, namely (Tanjung 2 and Carvi Agriagrihorti).The test was carried out in Sukamantri, Ciamis Regency with an altitude of 1300 m above sea level (above sea level) from May 2021 to October 2021. Observations were made on the characteristics of plant growth including, plant height, stem diameter, leaf length, leaf width and yield characteristics which include fruit length, fruit diameter, fruit weight per fruit, fruit weight per plant, fruit weight per plot, and fruit weight per hectare. The test results showed that there were differences in agronomic appearance between the three genotypes tested. The LV-037556 genotype displays the best plant growth, including plant height, stem diameter, leaf length and leaf width. The characteristics of the results of the three genotypes showed the best fruit weight per hectare (LV-037556 = 7.89 tons ha-1, compared to Tanjung 2 variety = 6.15 tons ha-1, Carvi variety = 5.84 tons ha-1).

Keywords: Genotype, Big Red Chili, Highlands

Abstract

This experiment aims to study the agronomic performance of three genotypes of red chili plants in Ciwidey District, Bandung Regency, West Java Province. The research method used was an experimental method with a simple randomized block design (RAK), with three treatments repeated nine times. Data were analyzed using variance and followed by Duncan's Multiple Range Test. The test material consisted of three red chili genotypes, namely one candidate for a new superior variety, and two varieties belonging to the Agricultural Research and Development Institute, namely (Tanjung 2 and Carvi Agriagrihorti). Testing was carried out in Sukamantri, Ciamis Regency at an altitude of 1300 m above sea level (asl.) from May 2021 to October 2021. Observations were made on plant growth characteristics including plant height, stem diameter, leaf length, leaf width and yield characteristics. including fruit length, fruit diameter, fruit weight per fruit, fruit weight per plant, fruit weight per plot, and fruit weight per hectare. The test results showed that there were differences in agronomic performance between the three genotypes tested. Genotype LV-037556 displays the best plant growth, including plant height, stem

❒ ISSN2302-9668 (Print), 2809-1183 (Online)

diameter, leaf length and leaf width. The characteristics of the three genotypes showed the best fruit weight per hectare (LV-037556 = 7.89 tons ha-1, compared to the Tanjung 2 variety = 6.15 tons ha-1, the Carvi variety = 5.84 tons ha-1).

Key words: Genotype, Big Red Chili, Highlands.

1. Introduction

Chili is a horticultural commodity that has important economic value in Indonesia and is one of the spice commodities that supports people's food needs (Triana, Budiwati, Sudarsono, & Ratnawati, 2017). Chili production in West Java Province from 2012 to 2016 has increased, supported by an increase in harvested area (Ministry of Agriculture, 2016). The increasing human need for red chilies makes the need for red chilies even greater. This is because Indonesian people use chilies every day as an ingredient in every dish (Tsurayya and Kartika, 2015). An increase in the use of chili as a food ingredient of 10.87% occurs every year and the total use of chili as a food ingredient was 1,925 million tonnes in 2014 (Ministry of Agriculture, 2016).

As land productivity decreases, the importance of food and horticultural crops increases, so to increase the production of chili plants an effective and efficient technology is needed to meet consumer needs in general or human needs in particular. One effort to increase chili production is by assembling new superior varieties. through a plant breeding program starting with germplasm collection. Germplasm not only includes superior varieties that have been assembled by breeders but also local varieties, wild relatives that have been cultivated and introductions from other countries.

Efforts to increase productivity and quality are greatly influenced by success in improving the genetic potential of plants. Improving chili characters, both qualitatively and quantitatively, requires several breeding stages, including expanding genetic diversity, character inheritance analysis, selection, testing and release of varieties (Syukur, Yunianti, & Dermawan, 2016). Mubarokah, et al., (2015) each variety has genetic differences that can influence growth and yield as well as different adaptability.

2. Materials and Methods

The research method used is verification by conducting experiments. The experiment was carried out at Kp. Margamulya, Lebak Muncang Village, Ciwidey District, Bandung Regency with an altitude of 1300 m above sea level and will be held from May 2021 to August 2021.

The materials used in this experiment were genotype (LV-037556), comparison plants Tanjung 2 and Carvi, other supporting materials were, chicken drum fertilizer, dolomite lime, NPK phonska fertilizer, NPK pearls, insecticides (regent, curacron, and demolish), fungicides (antracol, dithane and daconil) and foliar fertilizer (gandasil), while the tools used are hoes, hand sprayers, digital scales, soil testers, stationery, sigmats, meters, mulch (MPHP), bamboo stakes, buckets, and neat rope.

The experimental method used in this research was a simple Randomized Block Design (RAK), namely genotyping, consisting of three genotypes which were repeated

nine times to obtain 27 experimental plots. Each experimental unit consisted of 10 plants so the total population was 270 plants.

Table 1. List of Analysis of Various Randomized Group Designs

Diversity Source	Degrees of Freedom	Sum of Squares	Middle Square	Fit
Test	r-1	∑X.j2/tX..2/rt	KT1	KT1/ KT3
Treatment	t-1	∑ Xi.2/rX..2/rt	KT2	KT2/ KT3
Error	(r-1)(t-1)	(4)-(1)-(2)	KT3	
Total	rt-1	∑∑ X..2/1-Xij2/rt		

3. Results and Discussion

Plant Height

Based on the results of analysis of variance, it shows significant differences in the characters observed in plant height. genotype LV-037556 (V1), and the comparison variety tanjung (V2) and carvi variety (V3) tested showed different morphological characters in plant height.

Table 2, Agronomic Performance of Three Large Red Chili Genotypes on Plant Height

TREATMENT:	Plant Height (cm)
V1 (Genotype LV-037556)	92.44 c
V2 (Cape Variety)	65.16 a
V3 (Carvi Variety)	83.16 b

Note: The average number of treatments followed by the same letter in the column direction is not significantly different according to Duncan's Multiple Range Test at the five percent significance level.

From Table 2, there are differences in the three genotypes tested in plant height. These differences are due to differences in different genetic backgrounds. The plant with the highest plant height value is shown in genotype LV-037556 (V1) with a value of 92.44 which is very significantly different from the comparison plant of the tanjung variety (V2) with a value of (65.16 cm) and significantly different from the carvi variety (V3) with a value of (83.16 cm). cm).

Bar Diameter

Based on the analysis of variance in the stem diameter characteristics, the results showed significantly different results. genotype LV-037556 (V1) showed the highest diameter value.

Table 3. Agronomic Performance of Three Large Red Chili Genotypes on Stem Diameter

TREATMENT:	Bar Diameter (mm)
V1 (Genotype LV-037556)	17.44 b
V2 (Cape Variety)	14.29 a
V3 (Carvi Variety)	15.52 a

Information :The average number of treatments followed by the same letter in the column direction is not significantly different according to Duncan's Multiple Range Test at the five percent significance level.

❒ ISSN2302-9668 (Print), 2809-1183 (Online)

From Table 3, it can be seen that the genotype LV-037556 (V1) shows the highest difference in stem diameter, reaching (17.44 mm), which is significantly different from the tanjung variety (V2) with a diameter of (14.29 mm) and carvi (V3) with a value of (15.52mm). These results indicate that there are differences in stem diameter of the LV-037556 genotype. A large stem diameter is best for chili plants.

Leaf Length

Based on analysis of variance, it shows the longest leaf length value compared to other comparison varieties.

Table 4. Agronomic Performance of Three Large Red Chili Genotypes on Leaf Length

TREATMENT:	Leaf Length (cm)
V1 (Genotype LV-037556)	15.70 c
V2 (Cape Variety)	11.20 a
V3 (Carvi Variety)	13.63 b

Information :The average number of treatments followed by the same letter in the column direction is not significantly different according to Duncan's Multiple Range Test at the five percent significance level.

Table 4., Leaf length in genotype LV-037556 (V1) has a very significantly longer leaf length value (15.70 cm) compared to the comparison variety tanjung (V2) with nila (11.20 cm) and significantly different from the comparison variety carvi (V3) with a value of (14.63 cm.). This shows a real difference in the leaf length characteristics of the LV-037556 (V1) genotype with other comparison varieties.

Leaf Width

Based on analysis of variance, it shows the widest leaf width value compared to other comparison varieties.

Table 5. Agronomic Performance of Three Large Red Chili Genotypes on Leaf Width

TREATMENT:	Leaf Width (mm)
V1 (Genotype LV-037556)	6.28 b
V2 (Cape Variety)	4.92 a
V3 (Carvi Variety)	5.34 a

Information :The average number of treatments followed by the same letter in the column direction is not significantly different according to Duncan's Multiple Range Test at the five percent significance level.

Table 5. The leaf width of genotype LV-037556 (V1) has the highest value with a value of (6.28 cm) compared to the comparison variety Tanjung (V2) with a value of (4.92 cm) and carvi (V3) with a value of (5.34 cm). This shows that the genotype LV-037556 (V1) is significantly different from other comparison varieties.

Fruit Length

Based on analysis of variance, it shows that the fruit length character of genotype LV-037556 (V1) is not significantly different from the comparison variety Tanjung (V2) or the comparison variety Carvi (V2).

Table 6. Agronomic Performance of Three Large Red Chili Genotypes on Fruit Length

TREATMENT:	Length Per Piece (mm)
V1 (Genotype LV-037556)	14.67 a
V2 (Cape Variety)	14.60 a
V3 (Carvi Variety)	15.42 a

Information :The average number of treatments followed by the same letter in the column direction is not significantly different according to Duncan's Multiple Range Test at the five percent significance level.

In Table 6, it can be seen that the fruit length of the genotype LV-037556 (V1) with a value of (15.22 cm) does not show a significant difference with the comparison variety Tanjung (V2) with a value of (15.27 cm) or with the comparison variety Carvi (V3) with a value (15.31 cm). This value shows that the LV-037556 genotype has fruit length characteristics that are not much different from the comparison variety.

Width per Fruit

Based on the analysis of variance in (appendix 11), it shows that the width per fruit character of the genotype LV-037556 (V1) is not significantly different from the comparison variety Tanjung (V2) or the comparison variety Carvi (V2).

Table 7. Agronomic Performance of Three Large Red Chili Genotypes on Width per Fruit.

TREATMENT:	Fruit Width (mm)
V1 (Genotype LV-037556)	17.67 a
V2 (Cape Variety)	18.42 a
V3 (Carvi variety)	17.96 a

Information :The average number of treatments followed by the same letter in the column direction is not significantly different according to Duncan's Multiple Range Test at the five percent significance level.

In Table 7, it can be seen that the fruit diameter of genotype LV-037556 (V1) with a value of (17.67 cm) does not show a significant difference with the comparison variety Tanjung (V2) with a value of (18.42 cm) or with the comparison variety Carvi (V3) with a value (17.96 cm). This value shows that the candidate variety has a characteristic width per fruit that is not much different from the comparison variety.

Weight per Fruit

Based on the analysis of variance in (Appendix 12) it shows that the weight per fruit character of the LV-037556 (V1) genotype is not significantly different from the comparison variety Tanjung (V2) or the comparison variety Carvi (V2).

Table 8. Agronomic Performance of Three Large Red Chili Genotypes on Weight Per Fruit

TREATMENT:	Weight Per Fruit (g)
V1 (Genotype LV-037556)	14.62 a
V2 (Cape Variety)	15.08 a
V3 (Carvi Variety)	15.44 a

Information :The average number of treatments followed by the same letter in the column direction is not significantly different according to Duncan's Multiple Range Test at the five percent significance level.

❒ ISSN2302-9668 (Print), 2809-1183 (Online)

In Table 8, it can be seen that the weight per fruit of LV-037556 (V1) with a value of (14.62 cm) does not show a significant difference with the comparison variety Tanjung (V2) with a value of (15.08 cm) or with the comparison variety Carvi (V3) with a value (14.89 cm). This value shows that the candidate variety has weight characteristics per fruit that are not much different from the comparison variety.

Fruit Weight per Plant

Based on the analysis of variance in (Appendix 13), it shows that the fruit weight characteristics per plant of LV-037556 (V1) are not significantly different from the comparison variety Tanjung (V2) or the comparison variety Carvi (V2).

Table 9. Agronomic Performance of Three Genotypes of Large Red Chili against Fruit Weight Per Plant

TREATMENT:	Fruit Weight Per Plant (g)
V1 (Genotype LV-037556)	613.50 a
V2 (Cape Variety)	458.87 a
V3 (Carvi Variety)	465.04 a

Information :The average number of treatments followed by the same letter in the column direction is not significantly different according to Duncan's Multiple Range Test at the five percent significance level.

In Table 9, it can be seen that the weight of fruit per plantgenotypeLV-037556 (V1) with a value of (591.28 g) did not show a significant difference with the comparison variety Tanjung (V2) with a value of (458.87g) or with the comparison variety Carvi (V3) with a value of (465.04 g). This value shows that the candidate variety has fruit weight characteristics per plant that are not much different from the comparison variety.

Number of Fruits per Plant

Based on the analysis of variance in (Appendix 14), it shows that the character of the number of fruits per plant of LV-037556 (V1) is significantly different from the comparison variety Tanjung (V2) and the comparison variety Carvi (V2).

Table 10. Agronomic Appearance of Three Genotypes of Large Red Chili on the number of fruit planted

TREATMENT:	Number of Fruit Planted
V1 (Genotype LV-037556)	93.51 b
V2 (Cape Variety)	57.76 a
V3 (Carvi Variety)	70.62 a

Information :The average number of treatments followed by the same letter in the column direction is not significantly different according to Duncan's Multiple Range Test at the five percent significance level.

In Table 10, it can be seen that the number of fruit per plant LV-037556 (V1) with a value of (93.51) shows a significant difference with the comparison variety Tanjung (V2) with a value of (57.76) and with the comparison variety Carvi (V3) with a value of (470.62).). This value shows that the candidate variety has a different number of fruit per plant than the comparison variety.

Fruit Skin Thickness

Based on the analysis of variance in (Appendix 15), it shows that the fruit skin thickness character of the genotype LV-037556 (V1) is not significantly different from the comparison variety Tanjung (V2) or the comparison variety Carvi (V3).

Table 11. Agronomic Performance of Three Large Red Chili Genotypes on Fruit Skin Thickness

TREATMENT:	Fruit Skin Thickness (mm)
V (Genotype LV-037556)	1.39 a
V2 (Cape Variety)	1.48 a
V3 (Carvi Variety)	1.48 a

Information :The average number of treatments followed by the same letter in the column direction is not significantly different according to Duncan's Multiple Range Test at the five percent significance level.

In Table 11, it can be seen that the thickness of the fruit skingenotypeLV-037556 (V1) with a value of (93.51) shows a significant difference with the comparison variety Tanjung (V2) with a value of (57.76) and with the comparison variety Carvi (V3) with a value of (470.62). This value shows thatgenotypeLV-037556 has a thick fruit skin character that is no different from the comparison variety.

Fruit Weight per Plot

Based on the analysis of variance in (Appendix 16), it shows that the fruit weight characteristics per plot of genotype LV-037556 (V1) are significantly different from the comparison variety Carvi (V3) but not significantly different from the comparison variety Tanjung (V2).

Table 12. Agronomic Appearance of Three Red Chili Genotypes
Bigon Fruit Weight Per Plot

TREATMENT:	Fruit Weight Per Plot
V1 (Genotype LV-037556)	5521.11 b
V2 (Cape Variety)	4306.22 ab
V3 (Carvi Variety)	4086.78 a

Information :The average number of treatments followed by the same letter in the column direction is not significantly different according to Duncan's Multiple Range Test at the five percent significance level.

In Table 12, it can be seen that the weight of fruit per plotgenotypeLV-037556 (V1) with a value of (5521.11 g) showed significantly different results from the comparison variety Carvi (V3) with a value of (4086 g), but was not significantly different from the comparison variety Tanjung (V2) with a value of (4306.22 g). The comparison variety Tanjung (V2) was not significantly different from the comparison variety (V3).

Fruit Weight per Hectare

Based on the analysis of variance in (Appendix 17), it shows that the characteristics of fruit weight per hectare of the LV-037556 (V1) genotype show the highest yield compared to the comparison variety Tanjung (V2) and the comparison variety Carvi (V3).

❒ ISSN2302-9668 (Print), 2809-1183 (Online)

Table 13. Agronomic Appearance of Three Large Red Chili Genotypes on Fruit Weight Per Hectare

TREATMENT:	Fruit Weight Per hectare (ton/ha)
V1 (Genotype LV-037556)	7.89 tons ha-1
V2 (Cape Variety)	6.15 tons ha-1
V3 (Carvi Variety)	5.48 tons ha-1

In Table 13, it can be seen that the weight of fruit per plotgenotypeLV-037556 (V1) with a value of (7.89 tons) showed the highest yield compared to the comparison variety Tanjung (V2) with a value of (6.15 tons) and the comparison variety Carvi (V3) with a value of (5.84 tons).

4. Conclusion

Based on the results of the research and discussion, it can be concluded as follows: Each red chili genotype has a different agronomic appearance. The large chili genotype that is superior or suitable for development in the Ciwidey highland area is the LV-037556 (V1) genotype because it has better characteristics of plant height, leaf length, leaf width and number of fruit and fruit weight per hectare compared to the Tanjung comparison variety (V2) and Carvi (V3). The fruit weight characteristics per plot had a significantly positive genotypic and phenotypic correlation with leaf width, stem diameter, number of fruit per plant and fruit weight per plant.

Genotype LV-037556 (V1) can be used as a candidate variety with good potential for planting in the Ciwidey highlands. Based on the conclusions above, further research is needed to reveal comprehensive information regarding the influence of candidate varieties in different regions and agroclimates

5. References

Amalia, L., R. Setiamihardja, Murdaningsih HK, & AH Permadi. 1994. Inheritance, heritability and genetic progress of red chili plant resistance to Anthracnose disease. Zuriat, 5(1): 68-74.

Arif, AB, Sujiprihati, S & Syukur, M. 2012. Estimation of heterosis and heterobeltiosis in six chili genotypes using full diallel cross analysis. J. Hort., vol. 22, no. 2, p. 103-10.

Central Statistics Agency and Directorate General of Horticulture. Large Chili Production by Province. 2015 – 2019.

Basuki, RS, Arshanti, IW, Zamzani, L, Kharіriyatun, N, Kusandriani, Y & Luthfy, L 2016, 'Study of adoption of the Tanjung-2 variety of red chili as a result of research by the Vegetable Crops Research Institute in Ciamis Regency, West Java Province', J. Hort., vol. 24, no. 4, pp. 355–362.

Budi Waluyo and Darmawan Saptadi. 2019. Yieldability Test of 6 Genotypes of Large Chili Plants (Capsicum annuum L.) in the Indra Karra Setiawan Plateau*), Vol. 7 No. 12, December 2019: 2344–2351.

Cahya, EBN, Nurbaiti, and Deviona. 2014. Estimation of genetic parameters of chili plants (Capsicum annuum L.) in peatlands. Online Journal of Agricultural Faculty Students. (1)1: 1—14.

Daryanto, A, Sujiprihati, S & Syukur, M 2010, 'Study of heterosis and combining ability of agronomic characters of chili (Capsicum annuum L.) resulting from half diallel crosses', J. Agro. Indonesia, vol. 38, no. 2, p. 113-21.

Desita, AY, Dewi, S., and Muhammad, S. 2015. Evaluation of the Horticultural Character of IPB Ornamental Chili Strains at the Leuwikopo Experimental Garden. Indonesian Horticulture Journal. 6(2): 116 – 123.

Dwika Syattwa Arandito, 2018, Yieldability Test of 10 Strains of Cayenne Pepper (Capsicum annuum L.) IPB in Dramaga District, Bogor. 2018, 2(3):57-64.

Eva Oktaviani, Neni Rostini, and Agung Karuniawan. 2018. Appearance of Phenotypic Character Results in

Five Genotypes of Cayenne Pepper. Scientific Research Journal, Vol. 23, Number 2, October

Indra Karra Setiawan, Budi Waluyo and Darmawan Saptadi. 2019. Yieldability Test of 6 Genotypes of Large Chili Plants (Capsicum annuum L.) in the Highlands. Department of Agronomy, Faculty of Agriculture, Brawijaya University Jl. Veteran, Malang 65145 East Java. Vol. 7 No. 12, December 2019: 2344–2351.

Khairul Anwar Nasution and Respatijarti. 2019. Yieldability Test of Eight Lines of Hope Large Chili (Capsicum Annuum L.) Generation F6 Compact Type in the Lowlands Brawijaya University Jl. Veteran, Malang 65145 East Java, Indonesia. Email: nasutionkhairul98@gmail.com . Vol. 7 No. 3, March 2019: 464 – 473.

Kusmana, Rinda Kirana and Astiti Rahayu, 2019, Adaptation and Stability Test of Six Hybrid Chili Genotypes in the West Java Highlands. J. Hort. Vol. 29 No. 1, June 2019 : 17-22

Kusmana, et al,. 2018. Adaptation and Stability Test of Six Hybrid Chili Genotypes in the West Java Highlands.

Kusmanto. 2014. Yieldability test of ten free-pollinated chili (Capsicum annuum L.) lines that have potential as superior varieties. Thesis. Bogor Agricultural Institute.

Oktavianti, R., Maizar, Rosmaina. 2019. Application of PCR (polymerase chain reaction) using specific primers to detect drought-tolerant chilies. Journal of Agronomy and Tropical Crops 1(2):49-66.

Latifah Fitriani1, Toekidjo2, and Setyastuti Purwanti. 2013. Performance of Five Chili Cultivars (Capsicum annuum L.) in the Medium Plains, Vol.2 No.2. : 50-63

Maharani, S., Khomeida, N., Syukur, M., & Ardie, SW (2015). Radiosensitivity and diversity of cassava (Manihot esculenta Crantz) as a result of gamma ray irradiation. Indonesian Journal of Agronomy, 43(2), 111-117.

Mubarokah, N., HB Setyawan., U. Sholikhah. 2015. Capsaicin levels of two varieties of cayenne pepper (Capsicum frutescens L.) in response to the influence of nitrogen fertilizer dosage. Agricultural Scientific Periodicals. 1(10): 231 – 236

Muniarti, NS, Setyono, and Sjarif, AA 2013. Correlation and Cross-Screening of Growth Variables on Red Chili (Capsicum annuum L.) Production. Journal of Agriculture. 3(2): 111- 121.

Nilahayati and Lollie Agustina P. Putri. 2015. Evaluation of Phenotypic Character Diversity of Several Soybean Varieties (Glycine max L.) in the North Aceh Region. J. Floratek 10:36 – 45.

Nuryati, L., B. Waryanto, R. Widaningsih. 2016. Outlook for Agricultural Commodities in the Chili Horticulture Sub-Sector. Ministry of Agriculture Data and Data Center, Jakarta, ID.

Nyimas Sa'diyah, Anissa Fitri, Rugayah, Agus Karyanto. 2020. Correlation and Cross Analysis Between Branching and Production of Red Chili (Capsicum annuum L.) Results of Gamma Ray Irradiation. Tropical Agrotech Journal 8(1): 169-176.

Padma, J., Anbu, S., & Sivasubramaniam, K. (2017). Efficacy of morphological characters for varietal identification of Chilli. International Journal of Current Microbiology and Applied Sciences, 6(2), 690-700.

Idayanti, Idayanti, and Sri Lestari Purnamaningsih. 2018. Correlation Between Agronomic Characteristics and Yield in Cayenne Pepper (Frutescent Capsicum). Journal of Crop Production 6.3

Rahayu, FS and Sri, LP 2018. Yield Testing of Predecessors of Six Lines of Cayenne Pepper (Capsicum frutescens). Journal of Crop Production. 6(3): 386 – 391.

Rinda Kirana, 2006. Improving the Yield of Local Chili Varieties Through Crossing Between Varieties, Vol 17.

Rommahdi, M., Andy, S., and Nur, B. 2015. Phenotypic Diversity of the F2 Generation of Four Hybrid Chilies on Organic Farms (Capsicum annuum L.). Journal of Crop Production. 3(4): 259.

Setiadi, 2005. Planting Chili. Self-Help Spreader, Jakarta 183 Pages.

Sidiq, ARJ 2016. Estimation of genetic parameters and selection of quantitative characters for cayenne pepper (Capsicum annuum L.) F3 population. Thesis. Bogor Agricultural Institute.

Sobari, Enceng, and Noladhi Wicaksana. 2017. Genetic diversity and relationships of local West Java bambara bean (Vigna subteranea L.) genotypes. Agro Journal 4.2: 90-96.

Somantri, IH, M. Hasanah and H. Kurniawan. 2008. Ex-Situ Conservation Techniques, Rejuvenation, Characterization, Evaluation, Documentation and Utilization of Germplasm. http://my-curio.us/.

Sujitno, E and Meksy, D. 2015. Harvest Production of Various New Superior Varieties of Cayenne Pepper (Capsicum frutescens) in Dry Land, Garut Regency, West Java. Proceedings of the National Seminar

❒ ISSN2302-9668 (Print), 2809-1183 (Online)

on the Indonesian Biodiversity Society. 1(4): 874 – 877
Sunyoto, Octriana, L, Fatria, D, Hendri, and Kuswandi, 2015 Evaluation of Growth and Yield of Several Hybrid Papayas in the Bogor Development Area. J. Hort. Vol. 25 No. 3, September 2015: 193-200.
Tsurayya, S., L. Kartika. 2015. Institutions and strategies for increasing the competitiveness of chili commodities in Garut district. J Management and Agribusiness. 12(1):1-13.
Wasonowati, C. 2011. Increasing the growth of tomato plants (Lycopersicon esculentum) using a hydroponic cultivation system. Agrivigor Journal. 4(1): 21 – 27.
Zhigila, DA, Abdullahi, AA, Opeyemi, SK, and Felix, AO 2014. Fruit Morphological As Taxonomic Feature In Five Varieties Of Capsicum annuum L. Solanaceae. Journal of Botany. 2014(2014) : 107 – 112.