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Statistical Appraisal of the Yield Performance of Watermelon (*Citrullus Lanatus*) in Kazaure Hinterland in Response to Crop Variety and Fertilization Nature

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Abstract: *The study was aimed at identifying the ideal watermeloncrop variety to grow and the treatment combination to adopt for a bumperharvestin Kazaure hinterland. To achieve this, ten different watermelon crop varieties were planted and treated with five different fertilizers on a farmland specifically prepared for the study.The preparationwas done in such a way that fifty experimental units were replicated fifty times in each of the fifty pots preparedbased on factorial design scheme. The factors of interest were crop variety and fertilizer type.The experimental units were allowed to germinate for eight weeks. Number of leaves, vine length and chlorophyll content were measured from the germinated units. The data was analysed using two-way MANOVA, one-way ANOVAand other relevant statistical techniques. The results from the analysis revealed that the yield parameters significantly differ from one crop variety to another as well as from one type of fertilizer to another. Further investigations using separate one-way ANOVAson vine length, chlorophyll content, and number of leavesrevealed that theten-crop type have significant different effect on these parameters. The same technique revealed a significant different in impact between the types of fertilizer on the same parameters when considered separately.Differentiating the level of the factors, post-hoc test indicated that Sweet Polly,Traveler, and Captivation significantly increased the yield parameters than Bijou, King Man, SV0258WAT, Cut Above, Citation, Harvest Moon, and Triple Treat, while the rest did not differ significantly between themselves. The test also showed thatFarmyard Manure,Poultry Drop,and Cow Dung performed significantly better than Ureaand NPK 15 15 15 as levels of fertilizer-type experimental factor. The study thus encouragesgrowingSweet Polly, Traveler, and Captivationand be treated with Farmyard Manure, Poultry Drop, and Cow Dung for a bumper harvest in this part of the world.*

Keywords: Watermelon, MANOVA, Crop, Fertilizer and Performance

REFERENCES

[1]. Adeoye, I. B., Denton, O.A., Oladapo, M.O., Olufunmi, O.O., Okafor, B.N. and Ajetunmobi, T. (2007). Consumer Preference and Awareness for some Exotic Vegetables in Ibadan, Oyo State. In: Proceedings of 25th conference of the horticultural society of Nigeria. pp. 228-233.

[2]. Adunola, A. T., Chidimma, A. L., Olatunde, D. S., & Peter, O. A. (2015). Antibacterial activity of watermelon (Citrullus lanatus) seed against selected microorganisms. *African Journal of Biotechnology*, *14*(14), 1224-1229.

[3]. Ahn, J., Choi, W., Kim, S., & Ha, T. (2011). Anti-diabetic effect of watermelon (Citrullus vulgaris Schrad) on Streptozotocin-induced diabetic mice. *Food science and biotechnology*, *20*(1), 251-254.

[4]. Aliyu, L. (2000). The effect of organic and mineral fertilizer on growth, yield, and composition of pepper (Capsicum annum L). Biological Agriculture and Horticulture, 18: 29-36.

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[5]. Alka, G., Anamika, S., &Ranu, P. (2018). A review on watermelon (*Citrullus lanatus*) medicinal seeds. *J. Pharmacogn. Phytochem*, *7*, 2222-2225.

[6]. Anikwe, M. A. N., Agu, J. C., &Ikenganyia, E. E. (2016). Agronomic evaluation of four exotic tropical varieties of watermelon (Citrullus lanatus L.) in two agro-environments in Nigeria. *International Journal of Plant & Soil Science*, *10*(2), 1-10.

[7]. Aitbayeva, A., Zorzhanov, B., Mamyrbekov, Z., Absatarova, D., Rakhymzhanov, B., &Koshmagambetova, M. (2021). Comparison of different types of fertilizers on growth, yield and quality properties of watermelon (Citrullus lanatus) in the Southeast of Kazakhstan. *Eurasian Journal of Soil Science*, *10*(4), 302-307.

[8]. Beckman, E.O. (1973). Organic fertilization: vegetable farming luxury or necessity. Technical Communication of ISHA. pp. 29: 247.

[9]. Bhardwaj, A., Kumar, R., Dabas, V., &Alam, N. (2012). Evaluation of the anti-ulcer activity of Citrullus lanatus seed extract in Wistar albino rats. *Int J Pharm Pharm Sci*, *4*(5), 135-139.

[10]. Chalus, P. (1953). HN et A. L, Moldenke, Plants of the Bible. *Revue d'histoire des sciences*, *6*(2), 183-183.

[11]. Collins, J. K., Wu, G., Perkins-Veazie, P., Spears, K., Claypool, P. L., Baker, R. A., &Clevidence, B. A. (2007). Watermelon consumption increases plasma arginine concentrations in adults. *Nutrition*, *23*(3), 261-266.

[12]. Dangora, I, I., Abubakar, A. W., Auyo, M. I., &Muammad, M. (2020). Yield and Brix of Watermelon as Affected by Time of Planting and Variety at Bunkure, Sudan Savanna Ecological Zone of Nigeria. Dutse Journal of Pure and Applied Sciences (DUJOPAS), 6(4), 177-184.

[13]. Dauda, S.N., L. Aliyu and U.F. Chiezey. (2005b). Effect seedling age at transplant and poultry manure.

[14]. do Nascimento, J. A. M., Souto, J. S., & Cavalcante, L. F. (2017). Watermelon (Citrullus lanatusThunb.) Production as Affected by Soil Potassium Fertilizer and Livestock Manure. *Agrociencia Uruguay*, *21*(2), 7-14.

[15]. Dube, J., Ddamulira, G., & Maphosa, M. (2021). Watermelon production in Africa: challenges and opportunities. *International Journal of Vegetable Science*, *27*(3), 211-219.

[16]. Edwards, R. R., Ness, T. J., Weigent, D. A., &Fillingim, R. B. (2003). Individual differences in diffuse noxious inhibitory controls (DNIC): association with clinical variables. *Pain*, *106*(3), 427-437.

[17]. Egbuchua, C., &Enujeke, E. C. (2021). Yield Responses of Watermelon (Citrullus Lunatus (Thumb)in a Coastal Plain Soil Under Variable Fertilizer Rates and Irrigation Regime in a Dry Season Production Cycle.

[18]. Eifediyi, E. K., Remison, S. U., Ahamefule, H. E., Azeez, K. O., &Fesobi, P. O. (2017). Performance of watermelon (Citrullus lanatus L.) in response to organic and NPK fertilizers. *Agriculture and Environment*, *9*, 5-17.

[19]. Enujeke, E. C. (2013a). Response of watermelon to five different rates of poultry manure in asaba area of delta state, Nigeria. *IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)*, *5*(2), 45-50.

[20]. Enujeke, E. C. (2013b). An assessment of some growth and yield indices of six varieties of watermelon (CitrulusLanatus Thumb) in Asaba area of Delta state, Nigeria. International Research Journal of Agriculture Science and Soil Science, 3(11), 376-382.

[21]. Enujeke, E. C. (2015). An assessment of some growth and yield indices of six varieties of watermelon (CitrulusLanatus Thumb) in Asaba area of Delta State, Nigeria. *Tropical Agricultural Research and Extension*, *16*(4).

[22]. Erhirhie, E. O., & Ekene, N. E. (2013). Medicinal values on Citrullus lanatus (watermelon): a pharmacological review. *International Journal of Research in Pharmaceutical and Biomedical Sciences*, *4*(4), 1305-1312.

[23]. Gichimu, B. M., Owuor, B. O., & Dida, M. M. (2010). Yield of three commercial watermelon cultivars in Kenya as compared to a local landrace.

[24]. Hassan, L. E. A., Sirat, H. M., Yagi, S. M. A., Koko, W. S., &Abdelwahab, S. I. (2011). In vitro Antimicrobial activities of chloroformic, hexane, and ethanolic extracts of Citrullus lanatus var. citroides (Wild melon). *Journal of Medicinal Plants Research*, *5*(8), 1338-1344.

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[25]. Huh Y.C., I. Solmaz and N. Sari, (2008). Morphological characterization of Korean and Turkish watermelon germplasm. 1 Cucurbitaceae. 2008. Proceedings of the 9th Annual EUCARPIA meeting on genetics and breeding of Cucurbitaceae (Pitrat M. Ed.), INRA, Avignon, France. May 21-24.

[26]. Ibrahim, U., Hamma, I. L., & Mukhtar, A. A. (2015). Use of Organic Waste Materials as Fertilizer in Watermelon (Citrullus Lanatus L.) Production in Zaria, Kaduna State of Nigeria. *The Journal of Solid Waste Technology and Management*, *41*(4), 335-340.

[27]. Jarret, B., R. Bill, W. Tom, and A. Garry. (1996). Cucurbits Germplasm Report. Watermelon National Germplasm System. pp 29-66 Agricultural Service, U.S.D.A.

[28]. Jaskani, M. J., Kwon, S. W., & Kim, D. H. (2005). Comparative study on vegetative, reproductive, and qualitative traits of seven diploid and tetraploid watermelon lines. *Euphytica*, *145*(3), 259-268.

[29]. John, L.W., D.B. Jamer, L.T. Samuel, and L.W. Warner. (2004). Soil Fertility and Fertilizers: An Introduction to Nutrient Management. Pearson Education, India. pp. 106-153

[30]. Kahan, D. (2013). Making climate-science communication evidence-based. *Culture, politics and climate change: How information shapes our common future*, 203-220.

[31]. Madhavi, P., Vakati, K., & Rahman, H. (2012). Evaluation of the anti-inflammatory activity of Citrullus lanatus seed oil by in-vivo and in-vitro models. *International Research Journal of Pharmaceutical and Applied Sciences*, *2*(4), 104-108.

[32]. Maynard, D. N. (2001). *Watermelons: characteristics, production, and marketing*. ASHS Press.

[33]. Mrema, E., &Maerere, A. P. (2018). Growth and yield performance of watermelon during dry and wet seasons under tropical conditions. *International Journal of Vegetable Science*, *24*(5), 483-489.

[34]. Mujaju, C. (2009). Diversity of landraces and wild forms of watermelon (Citrullus lanatus) in southern Africa.

[35]. Munisse, P., Jensen, B. D., & Andersen, S. B. (2013). Genetic differentiation of watermelon landraces in Mozambique using microsatellite markers. *African Journal of Biotechnology*, *12*(36).

[36]. Narine, R., Chandranauth, R., Chibi, S., &Homenauth, O. (2019). Evaluation of Five Hybrid Watermelon Varieties for Cultivation and Performance in Coastal Guyana South America. *Agricultural Sciences*, *10*(04), 538.

[37]. Naz, A., Butt, M. S., Sultan, M. T., Qayyum, M. M. N., & Niaz, R. S. (2014). Watermelon lycopene and allied health claims. *EXCLI Journal*, *13*, 650.

[38]. Ojo, J. A., Olowoake, A. A., &Obembe, A. (2014). Efficacy of organomineral fertilizer and un-amended compost on the growth and yield of watermelon (Citrullus lanatus Thumb) in Ilorin Southern Guinea Savanna zone of Nigeria. *International Journal of Recycling of Organic Waste in Agriculture*, *3*(4), 121-125.

[39]. Okunlola, A. I., Adejoro, S. A., &Fakanlu, G. (2011). Evaluation of some manure types for the growth and yield of watermelon in Southwestern Nigeria. *Researcher*, *3*(3), 61-66.

[40]. Olaiya, A. (2020). Field Evaluation of Watermelon (CitrulusLanatus L.) Varieties as Affected by Organic Manure Application in Abeokuta. *Journal of Sustainable Development*, *17*(1 & 2), 68-76.

[41]. Oraegbunam, C. J., Njoku, O. M., Imoh, O. N., Obalum, S. E., Onyia, V. N., Atugwu, A. I., & Uchida, Y. (2016). Agronomic performance and adaptability of three varieties of watermelon (Citrullus lanatus) on sandy loam soil in Derived Savanna. *Agro-Science*, *15*(3), 46-50.

[42]. Sabo, M. U., Wailare, M. A., Aliyu, M., Jari, S., &Shuaibu, Y. M. (2013). Effect of NPK Fertilizer and Spacing on growth and yield of watermelon (Citrullus lanatus L.) in Kaltungo Local Government Area of Gombe State, Nigeria. *Scholarly Journal of Agricultural Science*, *3*(8), 325-330.

[43]. Sabo, M. U., Shuaibu, Y. M., Fagam, A. S., &Jibrin, A. D. (2015). Effects of Different Level of Cow Dung and NPK Fertilizer on the Growth and Yield of Watermelon (Citrilluslanatus L.) in Gombe State, Nigeria. *International Journal of Technology*, *5*(1), 63-68.

[44]. Sangita, K., & Alka, G. (2016). Utilization of Ashwagandha, ginger, and Shatavari root powder for the preparation of value-added "Cookies".

[45]. Schippers, R.R. 2000. African Indigenous Vegetable. pp. 56-60. An Overview of the Cultivated species. Chatham, U.K., N.R/ACO. EU

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[46]. Schippers, R. R. (2002). African indigenous vegetables: An overview of the cultivated species 2002.

[47]. Singh Gill, N., Sood, S., Muthuraman, A., Bali, M., & Dev Sharma, P. (2011). Evaluation of antioxidant and anti-ulcerative potential of Citrullus lanatus seed extract in rats. *Latin American journal of pharmacy*, *30*.

[48]. Wang, L., Liu, S., Manson, J. E., Gaziano, J. M., Buring, J. E., &Sesso, H. D. (2006). The consumption of lycopene and tomato-based food products is not associated with the risk of type 2 diabetes in women. *The Journal of nutrition*, *136*(3), 620-625.

[49]. Zohary, D., &Hopf, M. (2000). *Domestication of plants in the Old World: The origin and spread of cultivated plants in West Asia, Europe edition the Nile Valley* (No. Ed. 3). Oxford university press.