

## DAFTAR PUSTAKA

- Abadi F.R., Masithoh R.E., Sutiarso, L. & Rahayoe, S. (2022). A study of characterization procedure for non-destructive testing of soybean seed based on spectroscopy. *IOP Conference Series: Earth and Environmental Science*, 1059, 012015. <https://doi.org/10.1088/1755-1315/1059/1/012015>.
- Abasi, S., Minaei, S., Jamshidi, B., & Fathi, D. (2018). Dedicated non-destructive devices for food quality measurement: A review. *Trends in Food Science and Technology*, 78, 197–205. <https://doi.org/10.1016/j.tifs.2018.05.009>
- Abbott, J. A. (1999). Quality measurement of fruits and vegetables. *Postharvest Biology and Technology*, 15(3), 207–225. [https://doi.org/10.1016/S0925-5214\(98\)00086-6](https://doi.org/10.1016/S0925-5214(98)00086-6).
- Abdi, H. & Williams, L.J. (2010). Principal component analysis. *Wiley Interdisciplinary Reviews: Computational Statistics*. 2, 433-459. <http://dx.doi.org/10.1002/wics.101>.
- Abirami, B., Subashini, T. S., & Mahavaishnavi, V. (2020). Gender and age prediction from real time facial images using CNN. *Materials Today: Proceedings*, 33(xxxx), 4708–4712. <https://doi.org/10.1016/j.matpr.2020.08.350>
- Abu-Khalaf, N., & Hmidat, M. (2020). Visible/Near Infrared (VIS/NIR) spectroscopy as an optical sensor for evaluating olive oil quality. *Computers and Electronics in Agriculture*, 173(December 2019), 105445. <https://doi.org/10.1016/j.compag.2020.105445>.
- Adie, M. M., & Krisnawati, A. (2013). Biologi Tanaman Kedelai. *Balai Penelitian Kacang-Kacangan dan Umbi-Umbian*, Malang, p:45–73.
- Aguilera, J. M., & Stanley, D. W. (1999). Microstructural principles of food processing and engineering. *Trends in Food Science & Technology* (Vol. 1).
- Al-Amery, M., Downie, B., DeBolt, S., Crocker, M., Urschel, K., Goff, B., Teets, N., Gollihue, J. & Hildebrand, D. (2019). Proximate composition of enhanced DGAT high oil, high protein soybeans. *Biocatalyst and Agricultural Biotechnology*, Vol.21 (2019), 101303.
- Aldillah, R. (2015). Proyeksi Produksi dan Konsumsi Kedelai Indonesia. *Ekonomi Kuantitatif Terapan*, 8(1), 2301–8968.
- Ali, P.J.M. & Faraj, R.H. 2014. Data Normalization and Standardization: A Technical Report. *Machine Learning Technical Reports*, 2014, 1(1), pp 1-6. <https://doi.org/10.13140/RG.2.2.28948.04489>.
- Al-Loman, A. & Ju, L.K. (2016). Soybean carbohydrate as fermentation feedstock for

- production of biofuels and value-added chemicals. *Process Biochemistry*, Vol. 51(8):1046-1057.
- Alocilja, E. C. (1997). Principles of Biosystems Engineering: A sophomore-level course. *ASEE Annual Conference Proceedings*. <https://doi.org/10.18260/1-2--6738>.
- Altuntaş, Y., Cömert, Z., & Kocamaz, A. F. (2019). Identification of haploid and diploid maize seeds using convolutional neural networks and a transfer learning approach. *Computers and Electronics in Agriculture*, 163(40), 1–11. <https://doi.org/10.1016/j.compag.2019.104874>.
- Amanah, H. Z., Joshi, R., Masithoh, R. E., Choung, M. G., Kim, K. H., Kim, G., & Cho, B. K. (2020). Nondestructive measurement of anthocyanin in intact soybean seed using Fourier Transform Near-Infrared (FT-NIR) and Fourier Transform Infrared (FT-IR) spectroscopy. *Infrared Physics and Technology*, 111, 103477. <https://doi.org/10.1016/j.infrared.2020.103477>.
- Amaral, L.O., Miranda, G.V., Val, B.H.P., Silva, A.P., Moitinho, A.C.R. & Trevisoli, S.H.U. (2022). Artificial neural network for discrimination and classification of tropical soybean genotypes of different relative maturity groups. *Front Plant Sci*. 2022 Jul 12:13:814046.
- Aprillya, M. R., Suryani, E., & Dzulkarnain, A. (2019). The analysis of quality of paddy harvest yield to support food security: A system thinking approach (case study: East Java). *Procedia Computer Science*, 161, p:919–926. <https://doi.org/10.1016/j.procs.2019.11.200>.
- Araújo, S. A. De, Pessota, J. H., & Kim, H. Y. (2015). Beans quality inspection using correlation-based granulometry. *Engineering Applications of Artificial Intelligence*, 40, p:84–94. <https://doi.org/10.1016/j.engappai.2015.01.004>.
- Aristyagama, Y.H., Liantoni, F., & Parkisya, N.P.T. (2021). Hand detection on HSV color space model and syntactic extraction of fingertip by thinning method for hand gesture recognition. *Indonesian Journal of Informatics Education*. Vol.5 (2) 2021.
- Asniawati, Ridhay, A. & Prismawiryanti. (2018). Studi perbandingan rendemen produksi xantofil dan karoten kapang oncom merah pada berbagai waktu inkubasi. *KOVALEN*, 4(3):316-323.
- Association of Official Analytical Chemists (AOAC). (2007). Official Methods of Analysis of AOAC International (18th ed.). *Association of Official Analytical Chemists*. Washington.
- August Sjauw-Koen-Fa. (2010). Sustainability and the global food supply chain. In Rabobank group (Issue October 2010). *Rabobank group*. <https://www.futurelearn.com/courses/explore-how-farmers-produce-food->

sustainably/0/steps/60769.

- Azizi, A., Gilandeh, Y. A., Mesri-Gundoshmian, T., Saleh-Bigdeli, A. A., & Moghaddam, H. A. (2020). Classification of soil aggregates: A novel approach based on deep learning. *Soil and Tillage Research*, 199(January). <https://doi.org/10.1016/j.still.2020.104586>
- Bantacut, T. (2017). Pengembangan Kedelai untuk Kemandirian Pangan, Energi, Industri, dan Ekonomi. *PANGAN*, Vol. 26(1): 81 - 96, doi: 10.33964/jp.v26i1.346.
- Bazoni, C. H. V., Ida, E. I., Barbin, D. F., & Kurozawa, L. E. (2017). Near-infrared spectroscopy as a rapid method for evaluation physicochemical changes of stored soybeans. *Journal of Stored Products Research*, 73, 1–6. <https://doi.org/10.1016/j.jspr.2017.05.003>.
- Balitkabi. (2016). Deskripsi Varietas Unggul aneka kacang dan umbi. *Badan Penelitian dan Pengembangan Pertanian*, Kementerian Pertanian. Jakarta.
- Belyadi, H. & Haghighat, A. (2021). Metrics for classification model evaluation. Machine learning guide for oil and gas using python, A Step-by-Step Breakdown with Data, Algorithms, Codes, and Applications. *Elsevier*.
- Blanco, M., Villarroya, I. (2002). NIR spectroscopy: a rapid-response analytical tool. *Trends Anal. Chem.* 21 (4), 240–250.
- Bubun, B., Sukardi, S., & Suparno, O. (2018). Kinerja Rantai Pasok Kedelai di Kabupaten Grobogan. *Jurnal Aplikasi Bisnis dan Manajemen*, 4(1), p:32–43. <https://doi.org/10.17358/jabm.4.1.32>
- Budiraharjo, K., & Nurfadillah, S. (2020). Kinerja Rantai Nilai Kedelai di Kabupaten Grobogan. *AGRISEP*, 19(2), p:347–360. <https://doi.org/10.31186/jagrisep.19.2.347-360>.
- Buthelezi, N. M., Tesfay, S. Z., Ncama, K., & Magwaza, L. S. (2019). Destructive and non-destructive techniques used for quality evaluation of nuts: A review. *Scientia Horticulturae*, 247(December 2018), p:138–146. <https://doi.org/10.1016/j.scienta.2018.12.008>
- Çağındı, Ö., & Ötleş, S. (2004). Importance of laboratory information management systems (LIMS) software for food processing factories. *Journal of Food Engineering*, 65(4), 565–568. <https://doi.org/10.1016/j.jfoodeng.2004.02.021>
- Caporaso, N., Whitworth, M. B., & Fisk, I. D. (2018). Near-Infrared spectroscopy and hyperspectral imaging for non-destructive quality assessment of cereal grains. *Applied Spectroscopy Reviews*, 53(8), 667–687. <https://doi.org/10.1080/05704928.2018.1425214>.
- Carita, A.C., Santos, B.F., Shultz, J.D., Kohn, B.M., Chorili, M. & Leonardi, G.R.

- (2020). Vitamin C: One compound, several uses. Advances for delivery, efficiency and stability. *Nanomedicine: Nanotechnology, Biology, and Medicine*, 24 (2020) 102117, <https://doi.org/10.1016/j.nano.2019.102117>.
- Carvalho, L. (2008). Natural Genetic Variation in Cassava (*Manihot esculenta* Crantz) Landraces: A Tool for Gene Discovery. <https://doi.org/10.13140/2.1.1426.5289>.
- Cazón, P., Cazón, D., Vázquez, M. & Rodriguez, E.G. (2022). Rapid authentication and composition determination of cellulose films by UV-VIS-NIR spectroscopy. *Food Packaging and Shelf Life*, Vol. 31(2022) 100791.
- Chakravartula, S.S.N.; Moschetti, R.; Bedini, G.; Nardella, M. & Massantini, R. (2022). Use of convolutional neural network (CNN) combined with FT-NIR spectroscopy to predict food adulteration: A case study on coffee. *Food Control*, 135 (2022) 108816.
- Chen, S., Xiong, J., Guo, W., Bu, R., Zheng, Z., Chen, Y., Yang, Z., & Lin, R. (2019). Colored rice quality inspection system using machine vision. *Journal of Cereal Science*, 88(May), p:87–95. <https://doi.org/10.1016/j.jcs.2019.05.010>
- Chesani, F., Cota, G., Gavanelli, M., Lamma, E., Mello, P., & Riguzzi, F. (2020). Declarative and Mathematical Programming approaches to Decision Support Systems for food recycling. *Engineering Applications of Artificial Intelligence*, 95(July), 103861. <https://doi.org/10.1016/j.engappai.2020.103861>.
- Chu, X.; Huang, Y.; Yun, Y.H. & Bian, X. (2022). Chemometric Methods in Analytical Spectroscopy Technology. *Springer*, Singapore.
- Çınarler, G., Doğan, N., Kılıç, K. & Dogan, C. (2023). Rapid detection of adulteration in pistachio based on deep learning methodologies and affordable system. *Multimedia Tools and Applications*, 83, p:1-24, <https://doi.org/10.1007/s11042-023-16172-5>.
- Cisternas, I., Velásquez, I., Caro, A., & Rodríguez, A. (2020). Systematic literature review of implementations of precision agriculture. *Computers and Electronics in Agriculture*, 176(July), 105626. <https://doi.org/10.1016/j.compag.2020.105626>.
- Coradi, P. C., de Oliveira, M. B., de Oliveira Carneiro, L., Coelho de Souza, G. A., Elias, M. C., Brackmann, A., & Teodoro, P. E. (2020). Technological and sustainable strategies for reducing losses and maintaining the quality of soybean grains in real production scale storage units. *Journal of Stored Products Research*, 87, 101624. <https://doi.org/10.1016/j.jspr.2020.101624>.
- Cortés, V., Blasco, J., Aleixos, N., Cubero, S., & Talens, P. (2019). Monitoring strategies for quality control of agricultural products using visible and near-infrared spectroscopy: A review. *Trends in Food Science and Technology*, 85(January), p:138–148. <https://doi.org/10.1016/j.tifs.2019.01.015>.

- Ronald Criollo, R., Bayona, O., Ochoa, D., Cevallos-Cevallos, J., & Liao, W. (2020). Improving the detection of cocoa bean fermentation-related changes using image fusion. *Hyperspectral Remote Sensing, Theory and Applications, Earth Observation*, p:343-356, <https://doi.org/10.1016/B978-0-08-102894-0.00013-9>.
- Dai, F.J. & Chau, C.F. (2017). Classification and regulatory perspectives of dietary fiber. *Journal of Food and Drug Analysis*, Vol. 25(1):37-42.
- de Luna, R. G., Dadios, E. P., Bandala, A. A., & Vicerra, R. R. P. (2019). Size classification of tomato fruit using thresholding, machine learning and deep learning techniques. *Agrivita*, 41(3), p: 586–596. <https://doi.org/10.17503/agrivita.v41i3.2435>.
- Devianti, Sufardi, Hafsah, S., Sariadi, Ahmad Fachraniah, Arianti, N.D., Saputra, E. & Hartuti, S. (2023). Rapid and non-destructive determination of vitamin C and antioxidant activity of intact red chilies using visible near-infrared spectroscopy and machine learning tools. *Case Studies in Chemical and Engineering*, Vol. 8 (2023), <https://doi.org/10.1016/j.cscee.2023.100435>.
- Du, R., Lai, K., Xiao, Z., Shen, Y., Wang, X., & Huang, Y. (2012). Evaluation of the Quality of Deep Frying Oils with Fourier Transform Near-infrared and Mid-infrared Spectroscop. *Journal of Food Science*, 77(2), p:261–266. <https://doi.org/10.1111/j.1750-3841.2011.02551.x>.
- El-Mesery, H. S., Mao, H., & Abomohra, A. E. F. (2019). Applications of non-destructive technologies for agricultural and food products quality inspection. *Sensors (Switzerland)*, 19(4), p:1–23. <https://doi.org/10.3390/s19040846>
- Engel, T. (2019). Quantum Chemistry and Spectroscopy. In Pearson Education, Inc. *Pearson Education, Inc.* <https://doi.org/10.1038/255175c0>
- Esslinger, S., Riedl, J., & Fauhl-Hassek, C. (2014). Potential and limitations of non-targeted fingerprinting for authentication of food in official control. *Food Research International*, 60, p:189–204. <https://doi.org/10.1016/j.foodres.2013.10.015>.
- Etiosa, R.E., Chika, N.B. & Benedicta, A. (2018). Mineral and proximate composition of soya bean. *Asian Journal of Physical and Chemical Science*, Vol. 4(3):1-6.
- Farag, M.A., Sheashea, M., Zhao, C. & Maamoun, A.A. (2022). UV Fingerprinting approaches for quality control analyses of food and functional food coupled to chemometrics: a comprehensive analysis of novel trends and applications. *Foods*, 11(18). <https://doi.org/10.3390/foods11182867>.
- Fatchurrahman, D., Amodio, M.L., Chiara, M.L.V.D., Mastrandrea, L. & Colelli, G. (2022). Characterization and postharvest behavior of goji berry (*Lycium barbarum* L.) during ripening. *Postharvest Biology and Technology*, 191 (2022) 111975. <https://doi.org/10.1016/j.postharvbio.2022.111975>.



- Filzmoser, P., Serneels, S., Maronna, R., & Croux, C. (2020). Robust multivariate methods in Chemometrics\*†‡. In arXiv (2nd ed., Issue May). *Elsevier Inc.* <https://doi.org/10.1016/b978-0-12-409547-2.14642-6>.
- Firouz, M.S., Omid, M. & Rasvand, M. (2021). Dielectric spectroscopy coupled with artificial neural network for classification and quantification of sesame oil adulteration. *Information Processing in Agriculture*, 9(4):233-242.
- Fu, L., Liu, Z., Majeed, Y. & Cui, Y. (2018). Kiwifruit yield estimation using image processing by an android mobile phone. *IFAC PapersOnLine*, p:51-17 (2018) 185-190. <https://doi.org/10.1016/j.ifacol.2018.08.137>.
- Gebregziabher, B.S., Sheng-rui, Z., Azam, M., Jie, Q., Boateng, K.G.A., Yue, F., Yitian, L., Jing L., Bin, L. & Jun-ming, S. (2022). Natural variation and geographical distribution of seed carotenoids and chlorophylls in 1167 Chinese soybean accessions. *Journal of Integrative Agriculture*. <https://doi.org/10.1016/j.jia.2022.10.011>.
- Ginting, E., & Tastra, I. K. (2013). Standar Mutu Fisik Biji Kedelai. In Kedelai: Teknik Produksi dan Pengembangan (Vol. 1, pp. 444–463). *Balai Penelitian Tanaman Aneka Kacang dan Umbi*, Malang.
- Ginting, E., Yulifianti, R., & Harnowo, D. (2015). Sifat fisik dan kimia galur-galur harapan kedelai tahan hama utama. *Prosiding Seminar Hasil Penelitian Tanaman Aneka Kacang Dan Umbi Tahun 2015*, December, p:321–330.
- Gordon, A. (2020). Food Safety and Quality Systems in Developing Countries. In *Academic Press: Vol. III*. <http://dx.doi.org/10.1016/j.cirp.2016.06.001>
- Guan, C., Yahalom, S. (sam), Germanakos, L., Lapage, S., & Mckeever, B. (2019). Global Soybean Trade , Supply Chain and Tariffs. *Maritime Transport*, 187, p:239–250. <https://doi.org/10.2495/MT190221>.
- Guo, Z., Zhai, L., Zou, Y., Sun, C., Jayan, H., El-Seedi, H.R., Jiang, S., Cai, J. & Zou, X. (2024). Comparative study of Vis/NIR reflectance and transmittance method for on-line detection of strawberry SSC. *Computers and Electronics in Agriculture*, Vol.218, March 2024, 108744.
- Handayani, Y.S., Elva, R., P. Irnanda & K., Adhadi. (2023). nalisis Karakteristik Minyak Kedelai Dengan Penambahan Antioksidan Sebagai Alternatif Minyak Isolasi Transformator Terhadap Tegangan Tembus. *Jurnal Amplifier*, Vol. 13, No 2, November 2023, <https://doi.org/10.33369/jamplifier.v13i2.31278>.
- Hapke, B. (2017). Reflectance Spectrsocopy. Encyclopedia of Spectroscopy and Spectrometry (Third Edition). *Cambridge University Press*.
- Harnowo, D. (2017). Prinsip-prinsip pengelolaan pascapanen untuk mempertahankan daya simpan benih kedelai. In Teknik produksi benih kedelai (pp. 0–3). *IAARD*

Press. Jakarta.

- Hassan, S.M., Forsido, S.F., Tola, Y.B. & Bikila, A.M. (2024). Physicochemical, nutritional, and sensory properties of tortillas prepared from nixtamalized quality protein maize enriched with soybean. *Applied Food Research*, Vol. 4(1):100383.
- Hastawan, A.F., Septiana, R. & Windarto, Y.E. (2019). Perbaikan hasil segmentasi hsv pada citra digital menggunakan metode segmentasi rgb grayscale. *Edu Komputika Jurnal*. Vol. 6(1), p:32-37.
- Haugen, H. H., Furuvik, N. C. I., & Moldestad, B. M. E. (2016). Characterization of biomass wood. Proceedings of the 2 International Conference on Energy Production and Management (EQ 2016), [www.witconferences.com](http://www.witconferences.com).
- Hema, D. & Kanan, S. (2019). Interactive color image segmentation using HSV color space. *Science and Technology Journal*. Vol.7(1), 37-41, <http://doi.org/10.22232/stj.2019.07.01.05>.
- Horn, B., Esslinger, S., Schaarschmidt, S., & Fauhl-Hassek, C. (2019). The international symposium “Standardisation of non-targeted methods for food authentication”, November 28–29, 2016. *Trends in Food Science and Technology*, 90(February), p:166–169. <https://doi.org/10.1016/j.tifs.2019.02.032>.
- Huang, M., Wang, Q., Zhang, M., & Zhu, Q. (2014). Prediction of color and moisture content for vegetable soybean during drying using hyperspectral imaging technology. *Journal of Food Engineering*, 128, p:24–30. <https://doi.org/10.1016/j.jfoodeng.2013.12.008>.
- Ibrahim, H., Sazali, N., Norhayati, W. & Ismail, A.F. (2021). Nanocellulose-Based Materials and Recent Application for Heavy Metal Removal. *Water Air and Soil Pollution*, 232(7), 2021, <https://doi.org/10.1007/s11270-021-05245-6>.
- Indahsari, D & Saputro, T.B. (2018). Analisis Morfologi dan Profil Protein Kedelai Varietas Grobogan Hasil Iradiasi Pada Kondisi Cekaman Genangan. *Jurnal Sains Dan Seni ITS*, Vol. 7, No. 2 (2018), p:2337-3520, <https://doi.org/10.12962/j23373520.v7i2.37346>.
- Islami, F. (2021). Implementation of hsv-based thresholding method for iris detection. *Journal of Computer Networks. Architecture and High Performance Computing*. Vol. 3, p:97-104.
- Jia, F., Peng, S., Green, J., Koh, L., & Chen, X. (2020). Soybean supply chain management and sustainability: A systematic literature review. *Journal of Cleaner Production*, 255, 120254. <https://doi.org/10.1016/j.jclepro.2020.120254>.

- Jiang, X., Ge, K., Li, B., Ouyang, A., Liu, Y., Jiang, N. & Liu, H. (2024). Non-destructive detection of apple fungal infection based on VIS/NIR transmission spectroscopy. *Journal of Food Composition and Analysis*, Vol. 133, September 2024, 106469.
- Jiao, Z., Si, X., Zhang, Z., Li, G. & Cai, Z. (2012). Compositional study of different soybean (*Glycine max* L.) varieties by <sup>1</sup>H NMR spectroscopy, chromatographic and spectrometric techniques. *Food Chemistry*, Vol. 135(1), p:285-291.
- Jitanan, S. & Chimlek, P. (2019). Quality grading of soybean seeds using image analysis. *International Journal of Electrical and Computer Engineering (IJECE)*. Vol. 9(5), p:3495-3503.
- Kabir, G. & Hasin, A. (2013). Comparative analysis on artificial neural networks and neuro fuzzy models for multicriteria demand forecasting. *International Journal of Fuzzy System Applications*, Vol. 3(1), p:3-24.
- Kafle, B. P. (2020). Infrared (IR) spectroscopy. *Chemical Analysis and Material Characterization by Spectrophotometry*. <https://doi.org/10.1016/b978-0-12-814866-2.00007-5>
- Karlekar, A., & Seal, A. (2020). SoyNet: Soybean leaf diseases classification. *Computers and Electronics in Agriculture*, 172(March). <https://doi.org/10.1016/j.compag.2020.105342>.
- Karr-Lilienthal, L.K., Kadzere, C.T., Grieshop, C.M. & Fahey, G.C. (2005). Chemical and nutritional properties of soybean carbohydrates as related to nonruminants: A review. *Livestock Production Science*, 97 (2005), p:1–12.
- Kementan. (2018). Keputusan menteri pertanian republik Indonesia, Nomor : 990/HK.150/C/05/2018 tentang Petunjuk Teknis Produksi Benih Tanaman Pangan. *Kementerian Pertanian Republik Indonesia* (Vol. 1, Issue 1).
- Kementan. (2022). Laporan Kinerja Direktorat Jenderal Tanaman Pangan tahun 2022. *Direktorat Jenderal Tanaman Pangan, Kementerian Pertanian, Jakarta*.
- Kiliç, K., Boyaci, I. H., Köksel, H., & Küsmenoglu, I. (2007). A classification system for beans using computer vision system and artificial neural networks. *Journal of Food Engineering*, 78(3), p:897–904. <https://doi.org/10.1016/j.jfoodeng.2005.11.030>.
- Knysh, B. & Kulyk, Y. (2021). Development of an image segmentation model based on a convolutional neural network. *Eastern-European Journal of Enterprise Technologies*, vol. 2, no. 2, 2021, p. 6-15.
- Koklu, M., & Ozkan, I. A. (2020). Multiclass classification of dry beans using computer vision and machine learning techniques. *Computers and Electronics in Agriculture*, 174(May), 105507. <https://doi.org/10.1016/j.compag.2020.105507>.



- Kowles, R.V. & Pliilips R.L. (1988). Endosperm Development in Maize, Editor(s): G.H. Bourne, K.W. Jeon, M. Friedlander. *International Review of Cytology*, Academic Press, Vol. 112, p:97-136, [https://doi.org/10.1016/S0074-7696\(08\)62007-0](https://doi.org/10.1016/S0074-7696(08)62007-0).
- Kumar, V. Rani, A. Dixit, A.K. Pratap, D. & Bhatnagar, D. (2010). A comparative assessment of total phenolic content, ferric reducing-anti-oxidative power, free radical-scavenging activity, vitamin C and isoflavones content in soybean with varying seed coat colour. *Food Research International*, Vol. 43(1), p:323-328.
- Kurniawan, N.M., Setiani, B.E. & Dwiloka, B. (2019). Kadar Lemak, Kadar Air, Kadar Protein, dan Antioksidan Tempe Edamame (*glycine max* (l) Merrill) dengan Jenis Pengemas yang Berbeda. *Jurnal Teknologi Pangan*, Vol. 3(2), 2019, p:355-360.
- Kusumiyati & Putri, I.E. (2023). Comparison of color spectrophotometer and Vis/NIR spectroscopy on assessing natural pigments of cucumber applied with different ethephon concentrations. *Heliyon*, Vol. 9 (12):e22654.
- Linow, M.M. & Scharr, H. (2015). The leaf angle distribution of natural plant population: Assesing the canopy with a novel software tool. *Plants Method*, 11(1):11, <https://doi.org/10.1186/s13007-015-0052-z>.
- Liu, C., Li, Y., Tu, B., Wang, X., Tian, B., Zhang, Q. & Liu, X. (2020). Seed nutritional quality comparison of vegetable soybean genotypes at fresh pod and mature stage. *Emirates Journal of Food and Agriculture*. 2019. 31(6), p:405-414.
- Liu, D., Ning, X., Li, Z., Yang, D., Li, H., & Gao, L. (2015). Discriminating and elimination of damaged soybean seeds based on image characteristics. *Journal of Stored Products Research*, 60, p:67–74. <https://doi.org/10.1016/j.jspr.2014.10.001>.
- Li, W.; Tan, F.; Cui, J. & Ma, B. (2022). Fast identification of soybean varieties using Raman spectroscopy. *Vibrational Spectroscopy*, Vol. 123(2022): 103447.
- Longoni M, Freschi A & Cicala N. (2019). Non-invasive identification of synthetic organic pigments in contemporary art paints by visible–excited spectrofluorimetry and visible reflectance spectroscopy. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* (2019), <https://doi.org/10.1016/j.saa.2019.117907>.
- Lopes, E.J., Zepka, L.Q. & Queiro, M.I. (2017). Chlorophyll. *InTechOpen*.
- Ly, B.C.K., Dyer, E.B., Feig, J.L., Chien, A.L. and Bino, S.D. (2020). Research Techniques Made Simple: cutaneous colorimetry: a reliable technique for abjective skin color measurement: *The Journal of Investigative Dermatology* <https://doi.org/10.1016/j.jid.2019.11.003>.

- Lyu, F., Hendriks, W.H., van der Poel, A.F.B. & Thomas, M. (2022). Particle size distribution, energy consumption, nutrient composition and in vitro ileal digestion characteristics of hammer milled maize and soybean meal affected by moisture content. *Animal feed science and technology*, Vol. 288(2022):115317.
- Magnusson, B. & Koch, M. (2013). Measurement quality in water analysis. *Reference Module in Earth Systems and Environmental Sciences*. Elsevier.
- Manley, M. (2014). Near-infrared spectroscopy and hyperspectral imaging: Non-destructive analysis of biological materials. *Chemical Society Reviews*, 43(24), p:8200–8214. <https://doi.org/10.1039/c4cs00062e>.
- Manley, M. & Baeten, V. (2018). Spectroscopic Technique: Near Infrared (NIR) Spectroscopy, In book: Modern Techniques for Food Authentication. *Academic Press*, <https://doi.org/10.1016/B978-0-12-814264-6.00003-7>.
- Masithoh, R.E., Lohumi, S., Yoon, W.S., Amanah, H.Z. & Cho, B.K. (2020). Development of multi-product calibration models of various root and tuber powders by fourier transform near infra-red (FT-NIR) spectroscopy for the quantification of polysaccharide contents. *Heliyon*, Vol. 6 (2020), <https://doi.org/10.1016/j.heliyon.2020.e05099>.
- Masithoh, R.E., Pahlawan, M.F.R., Saputri, D.A.S., & Abadi, F.R. (2023). Visible-near-infrared spectroscopy and chemometrics for authentication detection of organic soybean flour. *Pertanika Journal of Science and Technology*, 31(2), p:671–688, <https://doi.org/10.47836/pjst.31.2.03>.
- Masithoh, R. E., Rahardjo, B., Sutiarso, L., & Hardjoko, A. (2011). Pengembangan Computer Vision System Sederhana Untuk Menentukan Kualitas Tomat. *Agritech*, 31(2), <https://doi.org/10.22146/agritech.9734>
- Masithoh, R. E., Rahardjo, B., Sutiarso, L., & Harjoko, A. (2013). Kinetics Model of Tomato Quality Changes During Storage. *Jurnal Teknologi Pertanian*, 14(1), p:21–28.
- Mcgrath, M.J. & Scanail, C.N. (2013). Sensing and sensor fundamentals. *Sensor Technologies*, [https://doi.org/10.1007/978-1-4302-6014-1\\_2](https://doi.org/10.1007/978-1-4302-6014-1_2).
- McMeekin, T. A., Baranyi, J., Bowman, J., Dalgaard, P., Kirk, M., Ross, T., Schmid, S., & Zwietering, M. H. (2006). Information systems in food safety management. *International Journal of Food Microbiology*, 112(3), p:181–194. <https://doi.org/10.1016/j.ijfoodmicro.2006.04.048>.
- Medic, J., Atkinson, C., & Hurburgh, C. R. (2014). Current knowledge in soybean composition. *JAOCS, Journal of the American Oil Chemists' Society*, 91(3), p:363–384. <https://doi.org/10.1007/s11746-013-2407-9>.
- Middelbos, I. & Fahey, G. (2008). Soybean Carbohydrates. *Soybeans: Chemistry*,

*Production, Processing, and Utilization*, p:269-296,  
<https://doi.org/10.1016/B978-1-893997-64-6.50012-3>.

Millatina, N.R.N., Calle, J.L.P., Sepúlveda, M.B., Setyaningsih, W. & Palma, M. (2024). Detection and quantification of cocoa powder adulteration using Vis-NIR spectroscopy with chemometrics approach. *Food Chemistry*, Vol. 449(2024): 139212.

Moghaddam, M.J. & Zdeh, H.S. (2011). Medical Image Segmentation Using Artificial Neural Networks. *Artificial Neural Networks - Methodological Advances and Biomedical Applications*, April 2011, p:120-139.

Mogili, U. M. R., & Deepak, B. B. V. L. (2018). ScienceDirect ScienceDirect Review on Application of Drone Systems in Precision Agriculture. *Procedia Computer Science*, 133, p:502–509. <https://doi.org/10.1016/j.procs.2018.07.063>

Momin, M. A., Yamamoto, K., Miyamoto, M., Kondo, N., & Grift, T. (2017). Machine vision based soybean quality evaluation. *Computers and Electronics in Agriculture*, 140, p:452–460. <https://doi.org/10.1016/j.compag.2017.06.023>.

Monago-Maraña, O., Eskildsen, C.E., Galeano-Díaz, T., Arsenia, M.P., & Wold, J.P. (2021). Untargeted classification for paprika powder authentication using visible – Near infrared spectroscopy (VIS-NIRS). *Food Control*, 121(June 2020). <https://doi.org/10.1016/j.foodcont.2020.107564>.

Monteiro, R. C.M., Gadotti, G.I., Maldaner, V., Curi, A.B.J. & Neto, M.B. (2021). Image processing to identify damage to soybean seeds. *Ciência Rural*, Santa Maria, Vol. 51(2), 2021. <https://doi.org/10.1590/0103-8478cr20200107>.

Moreno, J.J.M., Pol, A.P., Abad, A.S. & Blasco, B.C. (2013). Using the R-MAPE index as a resistant measure of forecast accuracy. *Psicothema*, Vol. 25, No. 4, p:500-506.

Morris, R. (2022). Reflectance Spectroscopy - A Useful Technique for Analysing Solid Samples. *International Labmate*, February, 2022, [www.labmate-online.com/article](http://www.labmate-online.com/article).

Nabi, B.G., Mukhtar, K., Ahmed, W., Manzoor, M. F., Ranjha, M.M.A.N., Kieliszek, M., Bhat, Z.F. & Aadil, R.M. (2023). Natural pigments: Anthocyanins, carotenoids, chlorophylls, and betalains as colorants in food products. *Food Bioscience*, 52 (2023) 102403, <https://doi.org/10.1016/j.fbio.2023.102403>.

Nabila P.; Saputra, M.F. & Saputra, R.A. (2022). Perbandingan ruang warna RGB, HSV dan YCBR untuk segmentasi citra ikan kembung menggunakan K-means clustering. *JATI*, Vol. 6(2), p:476-481.

Nasrulloh, N., Amar, M.I. & Simanungkalit, S.F. (2021). Komposisi proksimat, serat kasar dan organoleptik tempe campuran kedelai dan jali-jali. *Jurnal Ilmu Pangan dan Hasil Pertanian*, Vol. 5 (1), p:93-105.

- Nayak, A., Chakraborty, S. & Swain, D.K. (2023). Application of Smartphone image processing and transfer learning for rice disease and nutrient deficiency detection. *Smart Agricultural Technology*, 4(2023) 100195.
- Nematenia, E. & Mehdizadeh, S.A. (2018). Assessment of egg freshness by prediction of Haugh unit and albumen pH using an artificial neural network. Assessment of egg freshness by prediction of Haugh unit and albumen pH using an artificial neural network. *Food Measure*, 12, (2018), p:1449–1459.
- Ningrumsari, I., Budiasih, R. & Afrilliyanti. (2022). Kajian analisis nutrisi kedelai hitam (glycine soja (l) merriit) difermentasi oleh rhizopus oligosporus, aspergillus sojae dan konsorsiumnya terhadap karbohidrat dan lemak. *Jurnal Agribisnis dan Teknologi Pangan*, Vol. 2(2), p:90-98.
- Norman, A. G. Y. (1987). Soybean Physiology, Agronomy, and Utilizat. In Academic Press. Academic Press. <https://doi.org/10.1016/b978-0-12-521160-4.50009-8>.
- Nurhayati, O. D. (2015). Analisis citra digital ct scan dengan metode ekualisasi histogram dan statistik orde pertama. *Jurnal Sistem Komputer*, 5(1), p:1–4.
- Ocean Optics. (2015). Spectroscopy introduction and application, a guide for use with Ocean Optics OceanView software. *Ocean Optic*.USA.
- Okoronkwo, N.E., Mba, K.C. & Nnorom, I.C. (2017). Estimation of Protein Content and Amino Acid Compositions in Selected Plant Samples Using UV-Vis Spectrophotometric Method. *American Journal of Food Science and Health*, Vol. 3, No. 3 (2017) p:41-46.
- Osborne, B.G., Fearn, T. & Hindle, P.H. (1993). Spectroscopy with Application in Food and Beverage Analysis. *Longman Scientific & Technical*, Singapore.
- Pahlawan, M.F.R., Murti, B.M.A., & Masithoh, R.E. (2022). The potency of Vis/NIR spectroscopy for classification of soybean based of colour. *IOP Conf. Series: Earth and Environmental Science*, 1018. Yogyakarta: IOP Publishing Ltd.
- Pah, N.E.R., Mauko, A.Y. & Mola, S.A.S. (2021). Ekstrasi ciri warna hsv dan ciri bentuk moment invariant untuk klasifikasi buah apel merah. *J-ICON*, Vol. 9 (2), p:142~153.
- Pai, A. & Nair, B. (2015). Synthesis and characterization of a binary oxide ZrO<sub>2</sub>–TiO<sub>2</sub> and its application in chlorophyll dye-sensitized solar cell with reduced graphene oxide as counter electrodes. *Bulletin of Materials Science*, 38 p:1129-1133. 10.1007/s12034-015-0991-z.
- Paixao, J.V.C.C, Matsuo, E., Sousa, I.C, Nascimento, M. Oliveira, I.S., Macedo, A.F. & Santana, G.M. (2023). Classification of soybean cultivars by means of artificial neural networks. *Agronomy Science and Biotechnology*, 9, p:1-11.
- Pandey, R. K. (1987). a Farmer ' S Primer on Growing Cowpea on Riceland.

- Park, B., & Lu, R. (2015). Hyperspectral in Food and Technology Imaging Agriculture. *Hyperspectral Imaging Technology in Food and Agriculture*. [https://doi.org/10.1007/978-1-4939-2836-1\\_13](https://doi.org/10.1007/978-1-4939-2836-1_13).
- Pardosi, A.R. (2024). Analisis Perencanaan Peramalan Dan Safety Stock Sprite 250 ML Dengan Metode Time Series Di PT.XYZ. *Jupiter: Publikasi Ilmu Keteknikan Industri, Teknik Elektro dan Informatika*, Vol.2, No.2, Maret 2024. <https://doi.org/10.61132/jupiter.v2i2.84>.
- Patrício, D. I., & Rieder, R. (2018). Computer vision and artificial intelligence in precision agriculture for grain crops : A systematic review. *Computers and Electronics in Agriculture*, 153(April), p:69–81. <https://doi.org/10.1016/j.compag.2018.08.001>
- Prats-Montalbán, J. M., de Juan, A., & Ferrer, A. (2011). Multivariate image analysis: A review with applications. *Chemometrics and Intelligent Laboratory Systems*, 107(1), 1–23. <https://doi.org/10.1016/j.chemolab.2011.03.002>.
- Pusdatin. (2023). Analisis komoditas pangan strategis tahun 2023. *Pusat Data dan Informasi Pertanian (Pusdatin)*, Kementerian Pertanian, Jakarta.
- Qiu, L.-J., & Chang, R.-C. (2010). The Origin and History of Soybean. In *The Soybean, Botany, Production and Uses* by G. Singh. [www.cabi.org](http://www.cabi.org).
- Ramli, I., Munawar, A. A., & Ruslana, K. A. (2021). Prediksi cepat kualitas air menggunakan Lpas (Laser Photo-Acoustic Spectroscopy) dengan menerapkan metode koreksi cutting edge filtering. *Jurnal Teknik Pertanian Lampung (Journal of Agricultural Engineering)*, 10(2), 220. <https://doi.org/10.23960/jtep-1.v10i2.220-227>.
- Ratnaningsih, Ginting, E., Adie, M.M., & Harnowo. (2017). Sifat Fisikokimia Dan Kandungan Serat Pangan Galur-Galur Harapan Kedelai. *Jurnal Penelitian Pascapanen Pertanian*, Vol. 14 (1), Juni 2017, p:35-45.
- Redondo-Cuenca, A., Villanueva-Suárez, M. J., & Mateos-Aparicio, I. (2008). Soybean seeds and its by-product okara as sources of dietary fibre. Measurement by AOAC and Englyst methods. *Food Chemistry*, 108(3), p:1099–1105. <https://doi.org/10.1016/j.foodchem.2007.11.061>.
- Rodriguez-Saona, L. E., Giusti, M. M., & Shotts, M. (2016). Advances in infrared spectroscopy for food authenticity testing. *Advances in Food Authenticity Testing*. Elsevier Ltd. <https://doi.org/10.1016/B978-0-08-100220-9.00004-7>.
- Rodrigues, M., Oliveira, R.M., Santos, G.L.A.A., Reis, A.S., Furlanetto, R.H., Junior, L.A.Y.B., Coelho, F.S. & Nanni, M.R. (2022). Rapid quantification of alkaloids, sugar and yield of tobacco (*Nicotiana tabacum* L.) varieties by using Vis–NIR–SWIR spectroradiometry. *Spectrochimica Acta Part A: Molecular and*



- Biomolecular Spectroscopy*, Vol. 274, 2022, 121082, <https://doi.org/10.1016/j.saa.2022.121082>.
- Rong, D., Wang, H., Ying, Y., Zhang, Z., & Zhang, Y. (2020). Peach variety detection using VIS-NIR spectroscopy and deep learning. *Computers and Electronics in Agriculture*, 175(March), 105553. <https://doi.org/10.1016/j.compag.2020.105553>.
- Rozi, F., & Krisdiana, R. (2017). Kelembagaan perbenihan kedelai di indonesia. In Kelembagaan Perbenihan Kedelai (pp. 195–210). *IAARD Press*. Jakarta
- Santana, D.C., de Oliveira, I.C., de Oliveira, J.L.G., Baio, F.H.R, Teodoro, L.P.R., Junior, C.A.D., Seron, A.C.C., Ítavo, L.C.V., Coradi, P.C. & Teodoro, P.E. (2024). High-throughput phenotyping using VIS/NIR spectroscopy in the classification of soybean genotypes for grain yield and industrial traits. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, Vol. 310, 2024:123963.
- See, X.Z., Yeo, W.S. & Saptoro, A. (2024). A comprehensive review and recent advances of vitamin C: Overview, functions, sources, applications, market survey and processes. *Chemical Engineering Research and Design*, Vol. 206(6), p:108-129.
- Salcedo, I. A. L., & Carvajal, O. A. A. (2011). Precision Agriculture Applications in the Cultivation of Elaeis Guineensis and Hybrid O x G Oil Palms. *Revista de Ingeniería*, 33(May 2011), p:124–130.
- Setiawan, I.N., Kurniawan, R., Yuniarto, B., Caraka, R.E. & Pardamean, B. (2021). Parameter optimization of support vector regression using Harris Hawks optimization. *Procedia Computer Science*, 179 (2021), p:17–24.
- Shanmuganathan, S. & Samarasinghe, S. (2016). Artificial neural network modelling, studies. *Computational intelligent*, Vol. 28. Springer.Switzerland.
- Shi, D., Hang, J., Neufeld, J., Zhao, S., & House, J.D. (2022). Estimation of crude protein and amino acid contents in whole, ground and defatted ground soybeans by different types of near-infrared (NIR) reflectance spectroscopy. *Journal of Food Composition and Analysis* 111 (2022) 104601.
- Singh, N. & Shevkani, K. (2010). Maize: composition, bioactive constituents, and unleavened bread. *Elsevier*.
- SNI 3922-2022.(2022). Standar Nasional Indonesia (SNI) 3922:2022 Kedelai. *Badan Standardisasi Nasional*. Jakarta.
- Sorak, D., Herberholz, L., Iwascek, S., Altinpınar, S., Pfeifer, F. & Siesler, H. W. (2012). New Developments and Applications of Handheld Raman, Mid-Infrared, and Near-Infrared Spectrometers. *Applied Spectroscopy Reviews*, 47(2), p:83–115. <https://doi.org/10.1080/05704928.2011.625748>.

- Sridharan, K. (2016). Spectral Methods in Transition. *Spectral Methods in Transition Metal Complexes*, <http://dx.doi.org/10.1016/B978-0-12-809591-1.09987-4>.
- Sun, P., Li, D., Dong, B., Qiao, S., Ma, Xi. & Chen, X. (2009). Vitamin C: An immunomodulator that attenuates anaphylactic reactions to soybean glycinin hypersensitivity in a swine model. *Food Chemistry*, 113 (2009), p:914–918, <https://doi.org/10.1016/j.foodchem.2008.08.018>.
- Supriwan, Harahap, A.E. & Erwan, E. (2020). Evaluasi nutrisi pellet ayam pedaging berbahan kulit ari biji kedelai hasil fermentasi menggunakan *effective microorganism-4* dengan penyimpanan berbeda. *JHIP*, Vol. 6(2), p:77-92.
- Sutiarso, L., Suyantohadi, A., Kastono, D., & Nugroho, A. P. (2011). Aplikasi Sistem Monitoring Pertumbuhan Tanaman Berbasis Web Menggunakan Machine Vision. *Agritech*, 31(4), p:359–367.
- Suyantohadi, A. (2018). Peningkatan Kualitas Pemberdayaan Masyarakat melalui Aplikasi TI Pengembangan Kedelai Lokal Indonesia - Pekakekal dan Industri Kecil Pedesaan Berbasis Kedelai. *Seminar Nasional Pengabdian Masyarakat (SENADIMAS) Universitas Slamet Riyadi, Surakarta*, 2018.
- Swastika, D. K. S., Nuryanti, S., & Sawit, M. H. (2013). Kedudukan Indonesia dalam Perdagangan Internasional Kedelai. *Kedelai: Teknik Produksi Dan Pengembangan*, p:28–44. [http://bahttp/balitkabi.litbang.pertanian.go.id/publikasi/monograf/kedelai-teknik-produksi-dan-pengembangan/litkabi.litbang.pertanian.go.id/wp-content/uploads/2016/03/dele\\_2.dewa\\_.pdf](http://bahttp/balitkabi.litbang.pertanian.go.id/publikasi/monograf/kedelai-teknik-produksi-dan-pengembangan/litkabi.litbang.pertanian.go.id/wp-content/uploads/2016/03/dele_2.dewa_.pdf)
- Tahir, H. E., Xiaobo, Z., Jianbo, X., Mahunu, G. K., Jiyong, S., Xu, J. L., & Sun, D. W. (2019). Recent Progress in Rapid Analyses of Vitamins, Phenolic, and Volatile Compounds in Foods Using Vibrational Spectroscopy Combined with Chemometrics: a Review. *Food Analytical Methods*, 12(10), p:2361–2382. <https://doi.org/10.1007/s12161-019-01573-w>
- Tan, J., & Xu, J. (2020). Applications of electronic nose (e-nose) and electronic tongue (e-tongue) in food quality-related properties determination: A review. *Artificial Intelligence. Agriculture*, 4(July), p:104–115. <https://doi.org/10.1016/j.aiia.2020.06.003>
- Tastra, I. K. (2017). Teknologi Pascapanen Benih Kedelai dalam Pascapanen Benih Kedelai. *Balai Penelitian Tanaman Aneka Kacang dan Umbi*, Malang, p:155–174.
- Teye, E., Anyidoho, E., Agbemaflle, R., Sam-Amoah, L. K., & Elliott, C. (2020). Cocoa bean and cocoa bean products quality evaluation by NIR spectroscopy and chemometrics: A review. *Infrared Physics and Technology*, 104, 103127. <https://doi.org/10.1016/j.infrared.2019.103127>.

- Thangaraj, P. (2016). Proximate composition analysis, in: Pharmacological assays of plant-based natural products. *Progress in Drug Research*, vol. 71. Springer, Cham. [https://doi.org/10.1007/978-3-319-26811-8\\_5](https://doi.org/10.1007/978-3-319-26811-8_5).
- Trampus, P., Krstelj, V., Nardoni, G., & Trampus, P. (2019). ScienceDirect Structural ScienceDirect ScienceDirect ICSI 2019 The 3rd International Conference on Structural Integrity. ICSI 2019, The 3rd International Conference on Structural Integrity NDT integrity engineering – A new discipline NDT integrity engineering. *Procedia Structural Integrity*, 17, p:262–267. <https://doi.org/10.1016/j.prostr.2019.08.035>.
- Trchounian, A., Petrosyan, M. & Sahakyan, N. (2016). Plant Cell Redox Homeostasis and Reactive Oxygen Species, in: Redox State as a Central Regulator of Plant-Cell Stress Responses, Chapter 2, Editors: D.K. Gupta, J.M. Palma, F.J.Corpas. Springer (Switzerland), [https://doi.org/10.1007/978-3-319-44081-1\\_2](https://doi.org/10.1007/978-3-319-44081-1_2)
- USDA. (2007). United States Standards for Soybeans. *U.S. Standards*, 2600(202), 4. <https://www.gipsa.usda.gov/fgis/standards/810soybean.pdf>.
- Vig, J.R. & Walls, F.L. (2000). A review of sensor sensitivity and stability. *The 2000 IEEE/EIA International Frequency Control Symposium and Exhibition*.
- Vilaplana, A.G. & Viguera, C.G. (2017). Vitamins, in: Nutraceutical and Functional Food Components, Effects of Innovative Processing Techniques, Editors: Charis M. Galanakis. *Elsevier*.
- Vithu, P., & Moses, J. A. (2016). Machine vision system for food grain quality evaluation: A review. *Trends in Food Science and Technology*, 56, p:13–20. <https://doi.org/10.1016/j.tifs.2016.07.011>.
- Wallace, C. A. (2014). Food Safety Assurance Systems: Hazard Analysis and Critical Control Point System (HACCP): Principles and Practice. In Encyclopedia of Food Safety (Vol. 4). *Elsevier Ltd*. <https://doi.org/10.1016/B978-0-12-378612-8.00358-9>.
- Walsh, K. B., Blasco, J., Zude-Sasse, M., & Sun, X. (2020). Visible-NIR ‘point’ spectroscopy in postharvest fruit and vegetable assessment: The science behind three decades of commercial use. *Postharvest Biology and Technology*, 168(April 2019), 111246. <https://doi.org/10.1016/j.postharvbio.2020.111246>.
- Wang, C., Luo, X., Guo, Z., Wang, A., Zhou, R. & Cai, J. (2025). Influence of the peel on online detecting soluble solids content of pomelo using Vis-NIR spectroscopy coupled with chemometric analysis. *Food Control*, Vol.167, January 2025110777.
- Wang, M., Xu, Y., Yang, Y., Mu, B., Nikitina, M.A. & Xiao, X. (2022). Vis/NIR optical biosensors applications for fruit monitoring. *Biosensors and*

- Bioelectronics: X, Vol. 11(2022) 100197,  
<https://doi.org/10.1016/j.biosx.2022.100197>.
- Wang, Z., Millet, L., Mir, M., Ding, H., Unarunotai, S., Rogers, J., Gillette, M.U. & Popescu, Gabriel. (2011). Spatial light interference microscopy (SLIM). *Optics Express*, Vol. 19, No.2, <https://doi.org/10.1364/OE.19.001016>
- Wei, X., Li, S., Zhu, S., Zheng, W., Zhou, S., Wu, W., & Xie, Z. (2021). Quantitative analysis of soybean protein content by terahertz spectroscopy and chemometrics. *Chemometrics and Intelligent Laboratory Systems*, 208, 104199. <https://doi.org/10.1016/j.chemolab.2020.104199>.
- Wetzel, D.L.B. (1998). Analytical near infrared spectroscopy. In: Wetzel, D.L.B., Charalambous, G. (Eds.), *Instrumental Methods in Food and Beverage Analysis*. Elsevier, Amsterdam, p:141–194.
- Whelan, B., & Taylor, J. (2013). *Precision Agriculture for Grain Production Systems*. Csiro Publishing.
- Xu, R., Hu, W., Zhou, Y., Zhang, X., Xu, S., Guo, Q., Qi, P., Chen, L., Yang, X., Zhang, F., Liu, L., Qiu, L. & Wang, J. (2020). Use of near-infrared spectroscopy for the rapid evaluation of soybean [Glycine max (L.) Merri.] water soluble protein content. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 224 (2020) 117400.
- Yang, L., Wang, S., Zhang, H., Du, C., Li, S., & Yang, J. (2022). Effects of black soybean powder particle size on the characteristics of mixed powder and wheat flour dough. *LWT-Food Science and Technology*, 167 (2022) 113834.
- Yang, S., Lin, Y., Li, Y. & Xu, D. (2022). Deep neural network based sorghum adulteration detection in baijiu brewing. *IEEE Open Journal of Instrumentation and Measurement*, 1, p:1-1.
- Yost, M. A., Kitchen, N. R., Sudduth, K. A., Massey, R. E., Sadler, E. J., Drummond, S. T., & Volkmann, M. R. (2019). A long - term precision agriculture system sustains grain profitability. *Precision Agriculture*, 0123456789. <https://doi.org/10.1007/s11119-019-09649-7>.
- Youwai, S. & Makam, P (2024). CTrPile: A Computer Vision and Transformer Approach for Pile Capacity Estimation from Dynamic Pile Load Test. *The 2024 IEEE Conference on Artificial Intelligence (IEEE CAI 2024)*, Singapore. <https://doi.org/10.1109/CAI59869.2024.00080>.
- Yudiono, K. (2019). Peningkatan Daya Saing Kedelai Lokal Terhadap Kedelai Impor Sebagai Bahan Baku Tempe Melalui Pemetaan Fisiko-Kimia. *Jurnal Teknologi Industri Pertanian*, Vol. 14 (1), 2020, <https://doi.org/10.21107/agrointek.v14i1.6311>.

- Zaragoza, F.T. (2016). Classification of food spices by proximate content: principal component, cluster, meta-analysis. *NEREIS*, 8 (2016), p:23-33.
- Zhai, Z., Martínez, J. F., Beltran, V., & Martínez, N. L. (2020). Decision support systems for agriculture 4.0: Survey and challenges. *Computers and Electronics in Agriculture*, 170 (January), 105256. <https://doi.org/10.1016/j.compag.2020.105256>.
- Zhang, S., Shi, Z., Wang, G., Yan, R., & Zhang, Z. (2020). Applied Geochemistry Groundwater radon precursor anomalies identification by decision tree method. *Applied Geochemistry*, 121(August), 104696. <https://doi.org/10.1016/j.apgeochem.2020.104696>
- Zhou, L., Zhang, C., Qiu, Z., & He, Y. (2020). Information fusion of emerging non-destructive analytical techniques for food quality authentication: A survey. *TrAC - Trends in Analytical Chemistry*, 127, 115901. <https://doi.org/10.1016/j.trac.2020.115901>.
- Zhu, Z., Chen, S., Wu, X., Xing, C. & Yuan, J. (2018). Determination of soybean routine quality parameters using near-infrared spectroscopy. *Food Sci Nutr.* (2018), p:1–10.
- Zulzahrin, Z., Wong, M.L., Naziri, M.R.A., Lau, Y.L., Vythilingam, I., & Lee, W.C. (2024). Digital microscope-assisted photography improves the accuracy of mosquito wing measurement. *Heliyon*, 10 (2024), <https://doi.org/10.1016/j.heliyon.2024.e25207>.