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Agricultural Technology Implementation in Corn Plants in Gorontalo Regency

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INFO ARTICLE

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ABSTRACT

This study is part of Gorontalo Regency's corn crop food security initiatives using agricultural technology. The purpose of this study was to determine the effect of a 50 EC neem spray on insect population, attack intensity, cob weight without cob, cob length, and cob diameter of corn planted using the 2:1 legowo planting technique. This study was place in the cornfields of Dumati Village, Telaga Biru District, Gorontalo Regency, and lasted 5 months, from March to July 2021. This is a quantitative study that used a Randomized Block Design (RBD) with different doses of neem seed oil 50 EC: control (no treatment), neem seed oil 10 ml/1liter water, neem seed oil 15 ml/1liter water, and neem seed oil 20 ml/1liter water. The results revealed that applying 50 EC neem seed oil had a substantial influence on Spodoptera frugiperda pest population at 28 DAP, 35 DAP, and 42 DAP, as well as the severity of Spodoptera frugiperda pest attack at 35 DAP and 42 DAP. The length of the corn cob is the same. However, it had no effect on the weight of the cob without the husks or the diameter of the corn cob. However, in terms of yield of cob weight without husks and corn cob diameter, neem seed oil treatment with a dosage of 20 ml/1liter of water was the best treatment.

INTRODUCTION

Food crops are essential commodities that people require on a daily basis (Rahayu *et al*., 2020). Corn is one of the most dependable food crops and has grown to become a major agricultural commodity (Edy, 2019). Corn crop need in the globe as a second food source after rice necessitates an increase in corn output every year (Khatri *et al*., 2020; Shiferaw *et al*., 2011). Despite the fact that maize is not a basic food in Indonesia, demand for this product is increasing. The rise in demand is inextricably linked to the rise in demand for corn for food, industrial raw materials, and animal feed. This implies that the grain commodity now plays a critical role (Maryam *et al*., 2017). Overall, 61 percent of global maize production is used as animal feed and only 13 percent for human consumption (Erenstein *et al*., 2012; Grote *et al*., 2021).

Corn crop commodity is a very prospective and strategic commodity in Gorontalo Regency, where practically all agricultural villages know and cultivate corn. Corn has been a staple diet for Gorontalo people since the beginning. However, maize agriculture has not been handled utilizing technology in general. Although maize is not the sole means to meet food demands, it has a reasonably constant economic value in Gorontalo, where the corn business model in the market has nearly been accommodated, both for the Gorontalo business model system and exports (Dunggio, 2020).

The figures on the evolution of national corn agricultural output from 1993 to 2015 appear turbulent, but demonstrate a large rise, with corn production increasing from roughly 6 million tons to over 20 million tons. East Java, Central Java, and Lampung are the provinces with the highest maize production. According to the quadratic analysis, there are eight provinces that fall into quadra IV, including DI Yogyakarta, NTT, NTB, West Sumatra, Gorontalo, West Java, North Sumatra, and South Sulawesi, which have a high amount of maize output as well as high productivity per unit area of land (Aini, 2019).

According to the Gorontalo Provincial Agriculture Office (2017), maize output in Gorontalo has increased over the previous five years, rising from 644.8 thousand tons in 2012 to 882.9 thousand tons in 2016, with an average yield of 4.87 tons per hectare. According to the Gorontalo Provincial Agriculture Office, corn production surpassed 1.5 million tons in 2017 (Moonti & Wibowo, 2020).

According to the Gorontalo Province Central Bureau of Statistics in 2015, Gorontalo is one of the places in Indonesia that exports corn to neighboring countries such as Malaysia, Singapore, Thailand, and the Philippines. According to the harvested area (ha) and corn output (tons) in Gorontalo Province in 2013, the harvested area reached 140,000 hectares, while corn production reached 669,094 tons. Then, in 2014, with a harvested area of 148,916 ha and a production of 719,780 tons, the harvested area reduced to 129,000 ha, with a production of 643.513 tons and a productivity of 49.83 tons/ha. Gorontalo Province contains four regencies that are vital to the broad distribution of maize commodities; Gorontalo Regency is one of the regencies that are centers of corn growing in Gorontalo Province (Ahmad *et al*., 2019).

There are two methods for carrying out the implementation of public policy: directly executing the implementation in the form of a program or through the development of derivatives of the policy. Programs, activities, or initiatives clearly demonstrate implementation. This is a popular mechanism paradigm adopted from public management. A collection of concepts, such as programs, that are employed as projects and then transformed into actions, whether carried out by the government, the commercial sector, or the community (Dunggio, 2020).

Future changes in maize demand must be utilized as a guideline in designing food security policy in Indonesia and other emerging nations (Amzeri, 2018). Several elements that might impact food security and those that cause food insecurity are utilized to develop regional requirements. The choice of food security strategies is projected to boost farmers' revenue and food output (Hapsari & Rudiarto, 2017).

The development and diffusion of new technology (e.g., new crop varieties, precision agriculture, etc.) is critical to increasing productivity. Many times, particularly in poor nations, the distribution and acceptance of innovative technology is impeded, limiting their ability to improve food security (Lenaerts et al., 2019). Nonetheless, the government's attempts to increase corn yield continue. One of these is the use of the row legowo planting system (Istiyanti,2021; Susilastuti *et al*., 2018).

The row planting system is a planting method designed to increase plant productivity by increasing plant populations and utilizing plant side effects, where planting is done by closing the distance between plants in rows and stretching the distance between plants (Lubis et al., 2019; Rawung et al., 2014). This strategy should improve corn productivity. New maize varieties that are disease and insect resistant, adaptable to warmer temperatures, and use less water, fertilizer, labor, and fuel are also needed (Grote *et al*., 2021).

Seed flies (Atherigona sp.), soil caterpillars (Agrothis sp.), grub/uret (Phylophaga hellen), corn stem borer (Ostrinia furnacalis), armyworm frugiperda (Spodoptera frugiperda), cob borer (Helicoverpa armigera), and corn planthopper are among the insects that become pests on corn plantations in Indonesia (Peregrinus maydis). Some of these plants may even be the source of corn production failure in many regions throughout the world (Russianzi et al., 2021).

The armyworm frugiperda (Spodoptera frugiperda) is the pest that now controls the maize cropping industry (Hruska, 2019; Luginbill, 1928). This bug damages plants by boring the leaves of maize plants (Sisay et al., 2019). This pest group may cause serious damage to plants, leaving just the leaves and stems of the plant. When the population is very large, this pest will attack not just leaves but also young leaves, shoots, and corn cobs (Khatri et al., 2020). To limit the use of synthetic chemical insecticides in the eradication of Spodoptera frugiperda, an integrated pest control based on technology and ecologically benign natural resources, such as vegetable pesticides, is required. The application of botanical pesticides can result in safe and ecologically beneficial goods. One of the compounds that may be used as a vegetable pesticide is neem. The leaves and seeds of the neem plant can be used as a vegetable pesticide. Azadirachtin is the major active ingredient found in neem leaf and seed extract. In addition to being an insecticide, neem is a fungicide, virusicide, nematicide, bactericide, and acaricide (Wibawa, 2019). The effects of neem 50 EC treatment and the legowo 2:1 planting strategy on pest population, severity of attack, weight of cob without cob, length of cob, and diameter of corn cob are investigated in this study.

METHOD

From March to July 2021, the research was conducted in Dumati Village, Telaga Biru District, Gorontalo Regency. The study used a Randomized Block Design (RBD) with different concentrations of neem seed oil, 50 EC: N0 as control (no treatment), N1 with neem seed oil. 10 ml/1liter water, 15 ml/1liter water, and 20 ml/1liter water for N2 with neem seed oil. So there were four treatments, each of which was repeated three times to get 12 experimental units.

Data yang diperoleh dianalisis menggunakan analisis varians (ANOVA) untuk menentukan perlakuan mana yang berpengaruh terhadap populasi hama, intensitas serangan, dan bobot tongkol tanpa kelobot pada tanaman jagung. Perlakuan yang menunjukkan pengaruh signifikan kemudian dianalisis lebih lanjut dengan uji BNT *(Beda Nyata Terkecil)* pada taraf 5% dan 1%.

RESULT AND DISCUSSION

Pest Population of Spodoptera Frugiperda

Table 1 shows the average population of Spodoptera frugiperda on maize plants treated with 50 EC neem seed oil and planted using the 2:1 legowo planting scheme.

Table 1. Average Pest Population of Spodoptera Frugiperda Through Application Treatment of 50 EC Neem Seed Oil Planted with Legowo 2:1 Planting System

Treatment	Day After Planting(DAP) / Tail			
	21	28	35	42
N0	2.33±0.33	2.67±0.33[a]	3.00±0.00[a]	3.67±0.33[a]
N1	2.33±0.33	2.00±0.00[ab]	1.67±0.33[b]	1.00±0.00[b]
N2	2.00±0.68	1.67±0.33[bc]	1.00±0.00[bc]	0.67±0.33[b]
N3	2.00±0.58	1.00±0.00[c]	0.67±0.33[c]	0.33±0.33[b]
CV (%)	40.70	24.05	27.85	33.28
Pr (> F)	0.9306	0.0191	0.0027	0.0005

Notes: Superscripts followed by different letters showed significant differences in the 5% BNT follow-up test. Data presented in the form of Mean±SE

The findings of the 5% BNT test in Table 1 reveal that the application treatment of 50 EC neem seed oil at a dosage of 20 ml/1 liter of water had a significant effect on diminishing the population of Spodoptera pests at the ages of 28 DAP, 35 DAP, and 42 DAP. frugiperda on maize planted using a 2:1 legowo cropping method.The results showed that applying 50 EC neem seed oil at a dose of 20 ml/1liter of water reduced the pest population of Spodoptera frugiperda on corn plants more effectively than applying 50 EC neem seed oil at a dose of 15 ml/1liter of water, 10 ml/liter. 1 liter of water, and not applying 50 EC neem seed oil. It is hypothesized that the chemicals found in neem seeds, such as azadirachtin, meliantriol, salanin, nimbidin, and nimbin, are not preferred by Spodoptera frugiperda pests, resulting in a low population of pests attacking maize plants treated with neem seed oil insecticides. According to Sudarmo (2015) and Alzohairy (2016), organic pesticides have several advantages, including rapid degradation or decomposition by sunlight, generally low toxicity to animals and relatively safer in humans, and a broad spectrum of control. (stomach and nerve poison) and selective, can be relied on to overcome pests that have developed resistance to synthetic pesticides, low phytotoxicity, that is, does not poison and harm plants Insect pests will not visit plants that have been treated with neem seed oil. Nimbin and nimbidin have anti-microorganism properties such as anti-virus, anti-bacterial, and anti-fungal properties. Nimbin and nimbidin are extremely effective in controlling plant diseases (Govindachari et al., 1998).

Intensity of Spodoptera Frugiperda Pest Attacks

Table 2 shows the average intensity of Spodoptera frugiperda pest attack on maize plants treated with 50 EC neem seed oil and planted using the 2:1 legowo planting scheme.

Table 2. Average Intensity of Spodoptera Frugiperda Pest Attacks Through Application Treatment of 50 EC Neem Seed Oil Planted with Legowo 2:1 Planting System

Treatment	**Day After Planting(DAP) / %**			
	1	**8**	**5**	**2**
N0	4.00±0.58	4.00±0.58	5.00±0.00[a]	5.33±0.33[a]
N1	3.33±0.88	2.33±0.33	1.67±0.33[b]	1.00±0.00[b]
N2	3.00±0.00	2.33±0.33	1.33±0.33[b]	0.67±0.33[b]
N3	3.00±0.58	2.00±0.00	1.00±0.58[b]	0.33±0.33[b]
CV (%)	28.72	27.24	30.00	30.15
Pr (> F)	0.57	0.06	0.001	0.001

Notes: Superscripts followed by different letters showed significant differences in the 5% BNT follow-up test.
Data presented in the form of Mean±SE

The results of the 5% BNT test in Table 2 show that the application treatment of 50 EC neem seed oil at a dose of 20 ml/1 liter of water had a significant effect on reducing the intensity of Spodoptera frugiperda pest attacks on corn plants grown using the 2:1 legowo cropping system at 35 DAP and 42 DAP. The results showed that applying 50 EC neem seed oil at a dose of 20 ml/1liter of water reduced the intensity of Spodoptera frugiperda pest attacks on corn plants more effectively than applying 50 EC neem seed oil at a dose of 15 ml/1liter of water, 10 ml/1liter of water, and not applying 50 EC neem seed oil.

The azadirachtin component found in neem seeds operates as an inhibitor of the edyson hormone, which is a hormone involved in the metamorphosis of insects. Insects will be disturbed throughout the molting process, which involves the transition from eggs to larvae, larvae to cocoons, and cocoons to adults. Failure in this procedure usually ends in death (Raizada et al., 2001; Yasmil, et al., 2016).

Salanin serves as an appetite suppressant, reducing the insect's destructive capability significantly even when the bug has not perished. As a result, when using neem-based vegetable pesticides, pests typically do not die instantly but require several days to perish (usually 4-5 days). Insect pests exposed to neem seed powder will lie down, and their destructive potential will be substantially decreased since the insects are unwell. Meliantriol functions as an insect repellent, causing insect pests to avoid approaching plants due to meliantriol compounds.

Cob Weight Without Crab

Table 3 shows the average weight of cobs without husks on corn plants produced using the 2:1 legowo planting technique after the treatment of 50 EC neem seed oil.

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Table 3. Average Weight of Cobs Without Kelobot on Corn Plants Through Application Treatment of 50 EC Neem Seed Oil Planted with Legowo 2:1 Planting System

Treatment	Day After Planting(DAP) / Kg
	.05
N0	9.13±5.89
N1	8.40±0.05
N2	8.45±0.96
N3	9.90±0.90
CV (%)	1.81
Pr (> F)	0.5194

Notes: Superscripts followed by different letters showed no significant difference in the 5% BNT follow-up test. Data presented in the form of Mean±SE

Table 3 shows that the treatment of neem seed oil 50 EC had no significant influence on the weight of the cob without cobs in the 5% level BNT test. But descriptively, the application of neem seed oil 50 EC at a dose of 20 ml/1liter of water showed great results on cob weight without cob compared to the application of neem seed oil 50 EC at a dose of 15 ml/1liter of water, 10 ml/1liter of water and without oil application neem seed 50 EC. This is also impacted by the planting method employed, and a suitable planting system to utilize is legowo 2:1. According to Muslimin et al. (2021), increasing the number of plants on both sides of each legowo set has the potential to boost plant productivity owing to population growth. According to Bahua and Nurmi (2015), the jajar legowo planting strategy had a substantial influence on the weight of corn cobs; jajar legowo 2:1 resulted in a cob weight of 392.19 kg compared to 348.6 kg for jajar legowo 3:1.

Cob Length and Cob Diameter

Table 4 shows the average length of the cob and diameter of the cob on corn plants produced using the 2:1 legowo planting scheme after the treatment of 50 EC neem seed oil.

Table 4. Average Cob Length and Cob Diameter on Corn Plants Through Treatment Applications of 50 EC Neem Seed Oil Planted with the Legowo 2:1 Planting System

Treatment	Day After Planting(DAP) / Kg	
	.05	
	:ob Length	:ob Diameter
N0	21.53±4.71[a]	9.13 ±0.59
N1	17.93 ±3.49[b]	8.40 ±0.05
N2	19.47±3.02[b]	8.45 ±0.96

N3	19.27±3.58[b]	9.90 ±0.90
CV (%)	4.96	14.78
Pr (> F)	0.0214	0.5173

Notes: Superscripts followed by different letters showed significant and not significant differences in the 5% BNT follow-up test. Data presented in the form of Mean±SE

The findings of the 5 percent level BNT test in Table 4 demonstrate that applying 50 EC neem seed oil had a substantial influence on ear length but no significant effect on ear diameter. According to Sidauruk et al., (2020), the use of natural insecticides such as neem 50 EC has no effect on the physical condition of maize plants. This is due to the fact that the treatment of vegetable pesticides in varying quantities does not promote plant growth to develop faster. The botanical insecticides provided are intended to address the problem of pest assault on sweet corn. However, Soh et al., (2021) discovered that applying a 25 percent neem extract to chili plants might boost pre- and post-harvest characteristics such as pest severity, height, stem diameter, number of pods, hardness, and leaf area. The essential point is that chemical pesticides may be minimized in order to protect the environment.

CONCLUSION

This study will be used by the government to monitor, encourage, and advise farmers in the use of the 2:1 row legowo system technology in conjunction with the application of 50 EC neem seed oil to boost maize yield. Based on the findings of the research and discussion, it is possible to infer that the application of 50 EC neem seed oil at a dose of 20 ml/1liter of water can effect insect population decrease, attack severity, and corn cob length. It did not, however, alter the weight of the cob without husks or the diameter of the corn cob, but the application of neem seed oil 50 EC at a dose of 20 ml/1liter of water had excellent results on the weight of the cob without husks and the diameter of the corn cob. The increased quality of corn output should have an impact on farmer income while also maintaining the quantity of maize production in Gorontalo Regency.

REFERENCES

Ahmad, A. R., Baruwadi, M., & Tolinggi, W. K. (2019). Analisis Curahan Waktu Petani Jagung Di Kecamatan Tabongo Kabupaten Gorontalo. *Jurnal IlmiahAgribisnis*, *3*(2), 80–85.

Aini, L. M. (2019). Penentuan Provinsi-Provinsi Terbaik dalam Produksi Jagung Nasional Melalui Analisis Kuadran atas Variable Produksi dan ProduktivitasPer Satuan Luas Lahan. *Jurnal Ekonomi Pertanian Dan Agribisnis*, *3*(4), 751–760. https://doi.org/10.21776/ub.jepa.2019.003.04.10.

Amzeri, A. (2018). Tinjauan Perkembangan Pertanian Jagung Di Madura Dan Alternatif Pengolahan Menjadi Biomaterial. *Rekayasa*, *11*(1), 74. https://doi.org/10.21107/rekayasa.v11i1.4127.

Bahua, M., & Nurmi, I. (2015). *Pertumbuhan dan produksi tiga varietas jagung manis (Zea mays saccharatasturt) pada sistem jarak tanam jajar legowo berbeda*. Jurusan Agroteknologi, Fakultas Pertanian. Universitas Gorontalo.

Dunggio, T. (2020). Analisis Implementasi Kebijakan Program Bantuan Benih Jagung Hibrida Di Kabupaten Gorontalo. *Journal of Economic, Business, and Administration (JEBA)*, *1*(1), 13–26. https://doi.org/10.47918/.v1i1.7

Edy, S. (2019). Analisis Faktor-Faktor Yang Memengaruhi Perilaku KonsumenTerhadap Permintaan Jagung Pada Tingkat Rumah Tangga Di KecamatanPasarwajo Kabupaten Buton. *Media Agribisnis*, *3*(1), 45–56. https://doi.org/10.35326/agribisnis.v3i1.439

Erenstein, O., Sayre, K., Wall, P., Hellin, J., & Dixon, J. (2012). Conservation Agriculture in Maize- and Wheat-Based Systems in the (Sub)tropics: Lessons from Adaptation Initiatives in South Asia, Mexico, and Southern Africa. *Journal of Sustainable Agriculture*, *36*, 180–206.

https://doi.org/10.1080/10440046.2011.620230

Grote, U., Fasse, A., Nguyen, T. T., & Erenstein, O. (2021). Food Security and theDynamics of Wheat and Maize Value Chains in Africa and Asia. *Frontiers in Sustainable Food Systems*, *4*(February), 1–17. https://doi.org/10.3389/fsufs.2020.617009

Hapsari, N. I., & Rudiarto, I. (2017). Faktor-Faktor yang MempengaruhiKerawanan dan Ketahanan Pangan dan Implikasi Kebijakannya diKabupaten Rembang. *Jurnal Wilayah Dan Lingkungan*, *5*(2), 125. https://doi.org/10.14710/jwl.5.2.125-140

Hruska, A. J. (2019). Fall armyworm (Spodoptera frugiperda) management by smallholders. *CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources*, *14*, 043. https://doi.org/10.1079/PAVSNNR201914043

Istiyanti, E. (2021). Assessing Farmers' Decision-Making in the Implementationof Jajar Legowo Planting System in Rice Farming Using a Logit Model Approach in Bantul Regency, Indonesia. *E3S Web of Conferences*. https://doi.org/10.1051/e3sconf/202123201013

Khatri, S., Pakuwal, P., & Khanal, S. (2020). Integrated pest management of fallarmyworm infestations in maize fields in Nepal: A review. *Archives of Agriculture and Environmental Science*, *5*(4), 583–591. https://doi.org/10.26832/24566632.2020.0504023

Lenaerts, B., Collard, B. C. Y., & Demont, M. (2019). Review: Improving global food security through accelerated plant breeding. *Plant Science*, *287*(June), 110207. https://doi.org/10.1016/j.plantsci.2019.110207

Lubis, R. A., Harahap, I. S., Harahap, Q. H., Permadi, M. A., & Sulaiman Abdi. (2019). Jajar legowo planting system with sri method (system of rice intensification) and the use of planting tools for caplak in Simatohir Village, Padangsidimpuan District Angkola Julu. *Journal of Saintech Transfer*, *1*(2), 164–169. https://doi.org/10.32734/jst.v1i2.840

Luginbill, P. (1928). *The fall armyworm*. USDA Technical Bulletin. Maryam, Arifin, & Sadat, M. A. (2017). Faktor-Faktor Yang Mempengaruhi Permintaan Jagung Di Sulawesi Selatan. *Agribis*, *6*(2), 10–20.

Moonti, A., & Wibowo, L. S. (2020). Potret Sosial Ekonomi Petani Jagung Dan Kemitraan iGrow di Kabupaten Gorontalo. *Jambura Agribusiness Journal*,*2*(1), 22–33.

Rahayu, W., Rahayu, W., Barokah, U., & Fajarningsih, R. U. (2020). Strategi Pengembangan Usahatani Jagung Pada Lahan Kering Di Kabupaten Wonosobo. *Jurnal AGRISEP: Kajian Masalah Sosial Ekonomi Pertanian DanAgribisnis*, *19*(1), 207–218. https://doi.org/10.31186/jagrisep.19.1.207-218

Rawung, J. B. M., Indrasti, R., & Sudolar, N. R. (2021). The impact of technologicalinnovation of Jajar Legowo 2: 1 planting system on rice business income. *IOP Conference Series: Earth and Environmental Science*, 807 032052.https://doi.org/10.1088/1755-1315/807/3/032052

Russianzi, W., Anwar, R., & Triwidodo, H. (2021). Biostatistics of fall armywormspodoptera frugiperda in maize plants in bogor, west java, indonesia. *Biodiversitas*, *22*(6), 3463–3469. https://doi.org/10.13057/biodiv/d220655

Shiferaw, B., Prasanna, B. M., Hellin, J., & Bänziger, M. (2011). Crops that feed theworld 6. Past successes and future challenges to the role played by maize inglobal food security. In *Food Security* (Vol. 307). https://doi.org/10.1007/s12571-011-0140-5

Sisay, B., Tefera, T., Wakgari, M., Ayalew, G., & Mendesil, E. (2019). The efficacy ofselected synthetic insecticides and botanicals against fall armyworm, spodoptera frugiperda, in maize. *Insects*, *10*(2), 45. https://doi.org/10.3390/insects10020045

Sumarno, J., Hiola, F. S. I., & Hipi, A. (2020). Study on application of jarwo superrice technology package in Gorontalo Indonesia. *Proceeding International Conference on Green Agro-Industry*, 240–251.

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j o u r n a l h o m e p a g e : : https://jurnal.fisip.untad.ac.id/index.php/JPAG

Susilastuti, D., Aditiameri, A., & Buchori, U. (2018). The effect of jajar legowoplanting system on ciherang paddy varieties. *AGRITROPICA : Journal of Agricultural Sciences*, *1*(1), 1–8. https://doi.org/10.31186/j.agritropica.1.1.1-8

Wibawa, I. P. A. H. (2019). Uji efektivitas ekstrak mimba (Azadirachta indica A. Juss.) untuk mengendalikan hama penggerek daun pada tanaman Podocarpus neriifolius. *Jurnal Agroekoteknologi Tropika*, *8*(1), 20-3`.