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Productivity of Several Soybean Varieties (*Glycine max* L.) Based on Pruning of Corn (*Zea mays* L.) Leaves

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Abstract

This research on intercropping productivity of several soybean varieties based on pruning corn plant leaves was carried out on road Alai Kapalo Koto, Limau Manis, Pauh District, Padang at an altitude of 101 meters above sea level from July to November 2022. The purpose of this research is to investigate the relationship between various soybean types and pruning. The best corn leaf for plant development and production, as well as intercropping productivity. This study used a factorial completely randomized design (CRD) with three replications. The first component was soybean cultivars, which had four treatment levels (Anjasmoro, Grobogan, Devon 1, and Dega 1), and the second factor was the quantity of corn leaf pruning, which had four treatment levels (Pruning 0 1/2, 1/3, and 1/4 Corn Plant Leaves). The number of clipped leaves is determined from the base of the stem. The findings revealed that there was no interaction between the quantity of leaf pruning applied to maize plants and select soybean varieties and plant development and yield in an intercropping system. trimming half of the leaves of a maize plant has a greater influence on NKL and ATER values than other trimming levels. When compared to other soybean varieties, the Anjasmoro soybean variety produced higher ATER soybean yields. According to the findings of this study, 1/2 leaf pruning of corn plants and the Anjasmoro type of soybean plants should be used in an intercropping system.

Keywords: *Corn Pruning, Intercropping Soybean Varieties*

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INTRODUCTION

Soybean (*Glycine max* L.) is a strategic food commodity that is high in vegetable protein and has a wide range of applications, particularly as a raw material for the food sector (tempeh, tofu, tauco, and soy milk) and feed. The demand for soybeans continues to rise year after year, while domestic production has been unable to maintain pace, necessitating imports to make up the difference (Zakaria, 2010).

According to data from the Ministry of Agriculture of the Republic of Indonesia (2020), the harvested area in 2018 was 247,850 ha, while the harvested area in 2019 was 254,120 ha, resulting in an output of 226,700 stons and a productivity of 8.89 ku/ha. The national aim for soybean output is 1.12 million tons in 2020, 2.34 million tons in 2018, and 3 million tons in 2019, with a 26.84% annual increase (Ministry of Agriculture, 2019). Central Java province's average soybean productivity was 1.8 tonnes/ha higher than the national average of 1.57 tonnes/ha. Currently, national soybean productivity is only 1.56 tonnes/ha, with a range of 0.8-2.4 tonnes/ha at the farmer level, and 1.7-3.2 tonnes/ha at the research level, depending on land conditions and technology applied (Badan Litbang Pertanian, 2019).

Domestic soybean production is poor, necessitating imports from overseas; this is due to the kinds employed. The use of new superior varieties with high yields is one of the components of technology that is easiest and fastest to spread, because the contribution of superior varieties in increasing productivity is the easiest for farmers to see and understand, particularly the assembly of new superior varieties with high productivity characteristics and are tolerant to environmental stress. To boost soybean yield, both biotic and abiotic factors are required (Darman et al., 2017).

Soybean plants come in a range of kinds, each with its own set of growth and production characteristics. Each variety has distinct genetic features, as evidenced by its appearance and personality. Genetic differences can result in differing reactions to environmental and production conditions. Variety, soil and plant management, and other environmental factors all influence soybean growth and productivity (Zahrah, 2011).

Several superior kinds are currently being circulated in the community, including Anjasmoro, Devon 1, Dega 1, and Grobogan. The Anjasmoro cultivar has a yield potential of 2.25 tonnes/ha, is resistant to lodging, pods do not split easily, is slightly resistant to leaf rot, has a big seed size (16 g/100 seeds), and may be harvested between 83 and 93 days. Grobogan soybeans have a yield potential of 2.77 tonnes/ha, a seed weight of 18 g/100 seeds, and a harvest time of 76 days. Devon 1 soybean production has the potential to reach 3.09 tons per acre. The Dega 1 cultivar has a potential yield of 3.82 tonnes/ha (Balitkabi, 2015).

Corn is an important crop in addition to soybeans. Corn (Zea mays L.) is a food plant that is commonly grown in Indonesia. Because of its high carbohydrate content, this plant is one of Indonesia's staple foods, second only to rice (Iriany and Erawati 2014). Corn, in addition to being a basic meal, can also be used as an ingredient in animal feed, as well as the primary ingredient in industries such as syrup, paper, oil, paint, flour, and others. As a result, corn consumption will continue to rise in tandem with the corn processing industry and population growth. The expanding population of cities and industrial areas improves the chances for the selling of grain commodities (Rukmana, 2019).

According to BPS data (2020), output in West Sumatra in 2020 (939,465 tons) increased from (920,130 tons) in 2019. In 2018, production reached 993.161 tons, an increase over 2019 and 2020. In 2020, corn production was only around 939.465 tons, compared to 993.161 tons in 2018. This has something to do with the planting pattern employed in corn production. Food diversification through improved cropping patterns,

such as the intercropping cropping pattern between corn and soybeans, is one technology that can be utilized to increase maize productivity (Zakaria, 2016).

Intercropping is a cropping system that grows two or more varieties of plants on the same land at the same time in the same year. Intercropping is a breakthrough in maximizing land usage by planting multiple plant types, conserving land, and repelling pests and plant diseases. The intercropping system's use is heavily impacted by plant spacing (density) and variety selection. Legume intercropping systems with cereals, which are widely employed by farmers, do not always generate satisfactory results due to the selection of incompatible types (Yuwariah et al., 2017). High yielding soybean varieties are favoured because they mature at a young age, are resistant to biotic and abiotic stressors, and generate maximum yield (Marliah, 2010).

In addition to the intercropping arrangement, the trimming treatment of corn plants influenced corn plant development and yield. According to Sari (2021) research, the treatment of cutting three leaves of corn plants impacts the height of maize plants. Furthermore, Sumajow et al., (2016) found that pruning three lower leaves of maize plants 50 days after planting had the greatest influence on cob weight and cob length when compared to pruning two lower leaves and not pruning. This is because, about 50 days following planting, the lower leaves' function has shifted from creating assimilate to being an assimilating consumer. By trimming the leaves, the results of photosynthesis are no longer taken, allowing the outcomes of photosynthesis to be optimized while filling the cobs.

The treatment of trimming corn plants using an intercropping method is predicted to prevent shade of soybean plants while increasing corn plant production. To accomplish this pruning, consider the appropriate quantity of pruning so that both types of plants receive adequate sunshine intensity. According to Sari (2021), clipping three leaves under the corn cob has a substantial impact on the height of the soybean plant, the number of pods, the weight of one hundred seeds, and the yield of the soybean plant.

Surtinah (2015) claimed that plants that got a three-leaf pruning treatment under the corn cob produced the most dry weight of cobs, shelled dry weight, and weight of 100 shelled seeds. Mattobi (2014) also mentioned that trimming leaves can enhance the weight of the shells. Thus, the purpose of this study is to investigate the agronomic features of many soybean plant varieties in pruning maize leaves at the bottom of cobs using an intercropping method, which is expected to provide information on programs to boost soybean and corn output.

METHOD

This study was carried out between July and November of 2022. This study was conducted on Road Alai Kapalo Koto, Limau Manis, Pauh District, Padang, which is 101 meters above sea level. Materials used were Pioneer 32 variety corn seeds, Anjasmoro variety soybean seeds, Grobogan variety corn seeds, Devon 1 variety corn seeds, Dega 1 variety corn seeds, Urea fertilizer, SP36 fertilizer, and KCl. And Hoes, knives, tape measures, scales, buckets, label paper, plastic bags, ropes, bamboo, digital cameras, writing implements, and accompanying software like MS Excel and SPSS were among the tools utilized in this study.

A factorial design that was set up in a completely randomized design (CRD) was the study's chosen method of organization. The first factor was the four-leveled variety of soybean plants, and the second was the four-leveled trimming of corn plants. There were 48 research units total, with 3 replications of each treatment. For each study, 8 sample plants for soybeans and 5 sample plants for corn were selected.

The first element is the soybean variety, which has four levels:

Anjasmoro variety (V1)
Grobogan Variety (V2)
Devon 1 variety (V3)
Varieties Dega 1 (V4)

The second variable is the quantity of pruning leaves, which has four levels, including No Pruning or Pruning 0 Corn Leaves at the Bottom of the Cob.

Corn Leaves (P1)
Pruning 1/2 Corn Leaves at the Bottom of the Cob (P2)
Trimming 1/3 of the Corn Leaves at the Bottom of the Cob (P3)
Pruning 1/4 of the Corn Leaves at the Bottom of the Cob (P4)

The observed data and the data collected were examined by variance with the F test, and the Duncan New Multiple Range Test (DNMRT) was performed at a level of 5% if the estimated F was more than the F table of 5%. Separate monoculture maize plants were planted with a spacing of 75 x 20 cm, and monoculture soybean plants were planted with a spacing of 30 x 20 cm, in order to determine the land equivalence value, land equivalence value depending on time, and the competition index. The layout of the experimental plots, the sample plants, the plants in one experimental plot, the corn and soybean intercropping plots, and their monocultures were all put into practice in the field.

RESULTS AND DISCUSSION

Results

Leaf Area Index

According to the statistical analysis's findings, there was no interaction between the number of soybean types and corn plants that had been pruned in relation to the number of leaves on those plants. While numerous soybean types have the same effect on the number of corn plants' leaves, the quantity of leaf trimming applied to corn plants has a noticeably distinct impact. Table 1 contains information on the amount of leaves on corn plants at 8 MST.

Based on Table 1, it is clear that the single component of the number of corn leaves that need to be pruned affects the number of leaves on the corn plant in two very distinct ways. In comparison to the number of leaves acquired after pruning the leaves by half, third, and quarter, the maximum number of leaves was achieved without pruning the leaves. This is due to the fact that at the time of counting the leaves, the treatment of 1/2, 1/3, and 1/4 leaf pruning had already been completed at 8 WAP, leading in a decrease in the number of leaves. One of a plant's vital organs is its leaf. A plant's growth is significantly influenced by the number of leaves on the plant. This is so because a plant's leaves affect its ability to develop vegetatively and have other metabolic functions, (Yusuf and Indrianto 2017).

Table 1. Index of Corn Leaf Area in Several Soybean Varieties and Number of Corn Leaf Pruning in the Intercropping System

Pruning Corn Leaves	Variety				Average
	Anjasmoro	Grobogan	Devon 1	Dega 1	
Pruning 0	1.54	1.52	1.54	1.56	1.54 c
Pruning 1/2	0.74	0.72	0.75	0.78	0.75 a
Pruning 1/3	1.25	1.33	1.27	1.25	1.28 b
Pruning 1/4	1.30	1.36	1.28	1.30	1.31 b
Average	1.21	1.23	1.21	1.22	
KK = 6.59%					

Numbers followed by the same lowercase letter in the same column are not significantly different according to the DNMRT level of 5%.

The amount of sunlight is a factor in leaf production. The sun plays a significant role in the process of photosynthesis and regulates the rate of plant height growth, therefore both the quantity and quality of solar radiation have an impact on this process. A plant canopy's number of distributions and leaf angles control how much sunlight is absorbed and distributed there, which has an impact on photosynthesis and plant yields, (Lubis, 2019).

Number of Cobs per Plant

According to the results of the statistical analysis of the number of cobs produced per corn plant, there was no interaction between the number of corn plants that were pruned and particular soybean types and the number of cobs produced per corn plant. While some varieties of soybean plants did not significantly affect the number of cobs per corn plant, the number of trimming corn plant leaves had a varied influence on the number of cobs per corn plant. Table 2 contains information on the typical number of cobs per corn plant.

Table 2. Number of Corn Cobs per Plant on Several Soybean Varieties and Number of Corn Leaf Pruning in the Intercropping System

Pruning Corn Leaves	Variety				Average
	Anjasmoro	Grobogan	Devon 1	Dega 1	
Pruning 0	1.00	1.00	1.00	1.00	1.00 a
Pruning ½	1.08	1.00	1.00	1.00	1.02 a
Pruning 1/3	1.25	1.17	1.17	1.08	1.17 b
Pruning ¼	1.25	1.25	1.17	1.17	1.21 b
Average	1.15	1.10	1.08	1.06	
KK = 8.04					

Numbers followed by the same lowercase letter in the same column are not significantly different according to the DNMRT level of 5%.

The amount of leaf trimming treatment has an impact on the quantity of cobs produced by each maize plant, according to Table 2. When the amount of leaves were

pruned by 1/3 and by 1/4, the largest number of cobs per plant were produced. The fewest corns were produced per plant as compared to when no pruning was done and when only half of the leaves were pruned. Because the remaining leaves on the corn plant are still actively carrying out photosynthetic activities, the amount of leaf pruning 1/3 and the number of leaf pruning 1/4 under the corn cob have been able to increase the number of cobs planted. The results of photosynthesis that occur in the leaves produce photosynthates, which will be stored in the leaves and later needed to meet the needs of all growth phases of corn plants, including the vegetative and generative phases. The rate of photosynthesis in leaves has a direct impact on maize plant output. Beygi et al. (2013) found that trimming leaves in various amounts has diverse effects on yield. Sumajow et al. (2016) also mentioned that maize plants' lower leaves or the leaves under their cobs can be pruned to boost output.

Table 2 also shows that different soybean cultivars have the same impact on the quantity of maize cobs produced per plant. This is probably due to the fact that several varieties of soybean intercropped with corn are mutually advantageous in terms of maximizing the use of light, water, and nutrients, controlling weeds, pests, and diseases, and improving soil fertility through N fixation originating from legumes, which increases maize yields, one of which is the number of cobs per plant. This is in line with Marliah et al. (2010) assertion that intercropping can be done between annual crops and mutually advantageous seasonal crops, such corn and beans.

Yield of Dry Beans per Hectare (tonnes)

The findings of the statistical study of the dry seed yield per hectare of corn plants revealed that the production of dry seeds per hectare of corn plants was not affected by the number of corn plants that were pruned or by specific soybean types. While some kinds of soybean plants had no significant impact on the yield of dry seeds per hectare of corn plants, the degree of leaf trimming of corn plants had a dramatically different effect on that yield. Table 3 shows information on the typical dry bean production per hectare of corn.

Table 3. Yield of dry kernels per hectare of corn on several soybean varieties and the amount of corn leaf pruning in the intercropping system

Pruning Corn Leaves	Variety				Average (ton)
	Anjasmoro	Grobogan	Devon 1	Dega 1	
Pruning 0	9.33	9.14	9.41	9.35	9.31 b
Pruning 1/2	8.78	8.83	8.72	8.90	8.81 a
Pruning 1/3	9.34	9.17	9.47	9.43	9.35 b
Pruning 1/4	9.49	9.52	9.45	9.55	9.50 b
Average	9.24	9.16	9.26	9.31	
KK = 6.02%	6.02				

Numbers followed by the same lowercase letter in the same column are not significantly different according to the DNMRT level of 5%.

Based on Table 3, it is possible to deduce that the quantity of leaf trimming treatment affects the production of dry seeds per hectare of corn plants. At 1/4 of leaf

pruning, 1/3 of leaf pruning, and without pruning, the maximum dry seed yields were attained. While half as many leaf prunings resulted in the lowest seed weight per plot. At 1/4 leaf trimming, the average seed weight per plot was the highest; however, there was no discernible difference between 1/3 and no pruning. This is most likely due to the fact that the remaining leaves on the corn plant can increase the yield of assimilate, which is transferred to a larger part of the cob by pruning 1/4 of the leaf under the corn cob, so removing the leaves will further increase the rate at which the tissue of the production organ, namely the corn cob, fills up. Pruning results in higher-quality cob length, cob diameter, cob weight, and cob yield per plot. According to research by Asroh et al. (2015) pruning leaves 50 days after planting does not reduce production. Suratmini and Sunanjaya (2007) also found that pruning leaves under the cob 10–15 days after the flowers were pollinated had the greatest effects on increasing the production parameters of cob weight, cob length, and cob freshness.

Table 3 also shows that different soybean cultivars have the same impact on the amount of dry beans produced per hectare of corn plants. This is most likely a result of a number of soybean cultivars intercropping with corn not being able to match the availability of nitrogen resources in raising or noticeably raising corn yields. According to studies by Ayu et al. (2020), the production of sweet corn in the monoculture system was higher than the yield in the intercropping system, particularly in terms of cob length and fresh cob weight.

Leaf Chlorophyll Content (mg/ml)

According to the statistical study of the quantity of chlorophyll in soybean leaves at 6 WAP, there was no interaction between the amount of maize leaf pruning and some soybean types and the amount of chlorophyll in soybean plants. While numerous varieties of soybean plants had dramatically varying effects on the chlorophyll content of their leaves, the quantity of pruning applied to corn leaves had no discernible impact on the amount of chlorophyll in soybean plants. Table 4 provides information on the typical chlorophyll content of leaves from soybean plants.

Table 4. Leaf Chlorophyll Content of Soybean Plants in Several Soybean Varieties and Amount of Corn Leaf Pruning in the Intercropping System

Pruning Corn Leaves	Variety				Average
	Anjasmoro	Grobogan	Devon 1	Dega 1	
Pruning 0	14.24	14.33	11.52	10.36	12.61
Pruning 1/2	14.59	14.25	11.52	10.35	12.68
Pruning 1/3	14.58	14.34	11.52	10.36	12.70
Pruning 1/4	14.90	14.26	11.53	10.36	12.76
Average	14.57 C	14.29 C	11.52 B	10.36 A	
KK = 6.99%			`		

Numbers followed by the same lowercase letter in the same column are not significantly different according to the DNMRT level of 5%

Based on Table 4, it can be deduced that the quantity of leaf pruning applied to various soybean varieties and maize plants has no effect on the amount of chlorophyll present in soybean leaves. The quantity of leaf pruning makes no difference on how much chlorophyll is present in the leaves of soybean plants. This is probably because soybean

plants have adapted to low irradiation; in this study, soybean plants were shaded by corn plants, resulting in low sunlight intensity, which led to a decrease in chlorophyll content, though the chlorophyll content in soybean plants remained largely unchanged. The more often the plants are exposed to light, the easier it will be for the nutrients to be broken down, resulting in their green color. Conversely, less frequently exposed plants will experience etiolation, which makes it more difficult for the nutrients ingested by the plants to be broken down, resulting in their pale green or yellowish green color. This is in line with Lehninger (1978) assertion that chlorophyll is a pigment that captures light and is located in the thylakoid membrane. A Mg^{2+} complex molecule, chlorophyll is similar to hemoglobin's protophorpyrin in structure. Chlorophyll comes in two different varieties: a and b.

Table 4 further shows that different soybean cultivars have noticeably varying effects on the amount of chlorophyll in soybean plants. In comparison to the Devon 1 and Dega 1 types, the Anjasmoro and Grobogan kinds obtained the maximum chlorophyll content. This is most likely due to the Anjasmoro and Grobogan types' ability to adapt to low light conditions, which led to an increase in the levels of photosynthetic pigments and a significant increase in chlorophyll b in soybean plants of the Anjasmoro and Grobogan varieties. Light absorption rises as chlorophyll B concentrations rise. According to Chairudin et al. (2015) soybean types that can withstand shadow adapt to low light levels by producing more photosynthetic pigments.

Seed Yield per Hectare

According to the results of a statistical analysis of the seed yield per hectare of soybean plants, there was no interaction between the quantity of corn plants that were pruned and certain soybean types and the seed yield per hectare of soybean plants. The output of seeds per hectare of soybean plants, however, varied greatly depending on the method used to prune the leaves of corn plants and various kinds of soybean plants. Table 5 provides information on average soybean plant seed yields per hectare.

Table 5. Seed Yields per Hectare of Soybean Plants on Several Soybean Varieties and Number of Corn Leaf Pruning in the Intercropping System

Pruning Corn Leaves	Variety				Average
	Anjasmoro	Grobogan (Ton)	Devon 1	Dega 1	
Pruning 0	1.70	1.60	1.56	1.45	1.58 a
Pruning 1/2	1.75	1.73	1.69	1.63	1.70 b
Pruning 1/3	1.72	1.67	1.67	1.64	1.68 b
Pruning 1/4	1.72	1.66	1.61	1.58	1.64 ab
Average	1.72 C	1.67 BC	1.63 AB	1.58 A	
KK = 4.76%					

Numbers followed by the same lowercase letter in the same column are not significantly different according to the DNMRT level of 5%

Based on Table 5, it can be concluded that the number of maize plants that are pruned and certain soybean types have no effect on the grain production per hectare of

soybean plants. In comparison to 1/4 pruning quantity and no leaf pruning, the treatment of half and third pruning of corn plant leaves produced the highest seed production per hectare of soybean plants. Anjasmoro, Grobogan, Devon 1, and Dega 1 varieties showed a significant difference on each treatment of the amount of pruning corn plant leaves, as well as the number of leaf pruning 1/2 and the number of leaf pruning 1/3 compared without leaf pruning and the number of leaf pruning 1/4 in the yield per hectare. In comparison to Devon 1 and Dega 1 types, Anjasmoro and Grobogan produced more yields per hectare. Compared to 1/4 pruning and no leaf trimming, the 1/2 and 1/3 pruning produced larger yields. The experimental results from this experiment were less than the plant descriptions for seed yield per hectare for the Anjasmoro variety 2.03-2.25 tons/ha, the Grobogan variety 2.77 tons/ha, Devon 1 3.09 tons/ha, and Dega 1 3.82 tons/ha. Some types are allegedly less able to adjust to a nutrient- and water-restricted growth environment on Ultisol soil.

Table 5 also shows that certain kinds, specifically the amount of pruning corn 1/2 and 1/3, have the optimum pruning amount on yield per hectare in Ultisol soil. In this instance, the variety description figure has not yet been attained by the description of the production potential per hectare of the Anjasmoro, Grobongan, Devon 1, and Dega 1 varieties. This is as a result of some kinds' inability to adjust to their growth conditions, particularly on Ultisols. In addition, certain types have fewer branches and lower plant heights during the vegetative period, which results in fewer pods per plant. According to Taufiq and Sundari (2012) the type and cultivar of the plant determines how the plant responds to its surroundings.

Land Equivalence Value (LEV)

According to the findings of the statistical research, there was no interaction between the quantity of corn leaf pruning and various soybean types and the Land Equivalence Value. The quantity of trimming corn plants and various soybean plant kinds in each experiment, however, had a noticeably varied impact on the Land Equivalence Value. Table 6 contains data on average Land Equity Values.

Table 6. Land Equivalence Value of Several Soybean Varieties and Amount of Corn Leaf Pruning in the Intercropping System

Pruning Corn Leaves	Variety				Average
	Anjasmoro	Grobogan	Devon 1	Dega 1	
Pruning 0	1.69	1.62	1.63	1.58	1.63 a
Pruning 1/2	1.78	1.79	1.76	1.75	1.77 b
Pruning 1/3	1.82	1.78	1.81	1.79	1.80 b
Pruning 1/4	1.75	1.73	1.70	1.70	1.72 ab
Average	1.76	1.73	1.72	1.71	
KK = 3.93%					

Numbers followed by the same lowercase letter in the same column are not significantly different according to the DNMRT level of 5%

Table 6 shows that the quantity of trimming done to the leaves of different varieties of soybean plants and maize has a singular impact on the LVE score. The LVE

value for the number of pruning leaves that has a lot of leaf pruning has a higher value, precisely 1.80, which means that for monoculture crops, it takes 1.80 times the same plot size to get the same yield or production in one plot for corn and soybean plants. More leaf pruning on corn plants results in high LVE values, which suggests that intercropping corn and soybeans with 1/2 and 1/3 leaf pruning can enable soybean plants get enough light to maintain their production when grown together with corn.

LVE values of 1.76 and 1.73 were higher for the Anjasmoro and Grobogan types. As a result, there won't be a drop in production when corn and soybeans are intercropped since there will be an adequate supply of nutrients, particularly nitrogen, for maize plants to use. The rise in the NKL value in the intercropping system will depend on the type of plant. Plants with various leaf canopies combine well in the intercropping method to produce good results. According to Marta (2013), choosing the appropriate plant species for an intercropping system will boost agricultural production. It is anticipated that plants with various habits and root systems will supply enough growth elements to boost the yields of the two intercropped plants.

Area Time Equivalent Ratio (ATER)

The findings of the statistical study revealed that the ATER value was not affected by the amount of maize leaf trimming or some soybean types. The quantity of trimming corn plants and various soybean plant kinds in each treatment, however, had a noticeably distinct impact on the ATER score. In Table 7, data on the typical ATER value are shown.

Table 7 demonstrates that the amount of trimming done to the leaves of various varieties of soybean plants and maize has an impact on the ATER score. In comparison to the other amounts of pruning corn leaves, the ATER value without pruning was lower, at 1.50. The higher ATER values, 1.62 and 1.64, were achieved for leaf trimming of half and third, respectively. According to this study, all treatments had ATER values greater than 1, indicating that the intercropping cropping plan was longer-term more profitable. ATER's value is also impacted by various soybean plant kinds. The Dega 1 variant yielded the lowest ATER value. However, altogether, all soybean cultivars with an ATER score of 1 produced yields greater than 1.

Table 7. Area Time Equivalent Ratio in Several Soybean Varieties and Amount of Corn Leaf Pruning in the Intercropping System

Pruning Corn Leaves	Variety				Average
	Anjasmoro	Grobogan	Devon 1	Dega 1	
Pruning 0	1.61	1.47	1.50	1.41	1.50 a
Pruning 1/2	1.69	1.62	1.61	1.55	1.62 b
Pruning 1/3	1.72	1.60	1.66	1.57	1.64 b
Pruning 1/4	1.66	1.56	1.56	1.50	1.57 ab
Average	1.67 C	1.56 AB	1.58 B	1.51 A	
KK = 4.09%					

Numbers followed by the same lowercase letter in the same column are not significantly different according to the DNMRT level of 5%

According to Herlina (2011), intercropping has several advantages, including making maintenance easier, lowering crop failure, ssaving money on production facilities, and improving land use efficiency. Furthermore, Ceunfin et al. (2017) highlighted that the symbiotic mutualism between the intercropped plants and the proper pairing of plants and cropping methods were both factors in the improvement in land productivity in the intercropping system. Soybean plants can fix free nitrogen in the air, as is well known, making it available for corn plants to use for growth. Conversely, soybean plants may survive under maize stands because they can tolerate the shadow.

CONCLUSION

Several conclusions may be drawn from the research's findings, including the following: 1) Corn plant growth and yield are not influenced by the number of corn plants that are pruned and the various soybean plant varieties on the observation parameters. 2) Compared to other pruning amounts, the amount of pruning of 1/2 corn leaves has a better impact on land use efficiency (NKL) and land use efficiency based on time (ATER). 3) When compared to other soybean varieties, the Anjasmoro soybean variety produced greater soybean yields based on time-based land use efficiency (ATER).

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